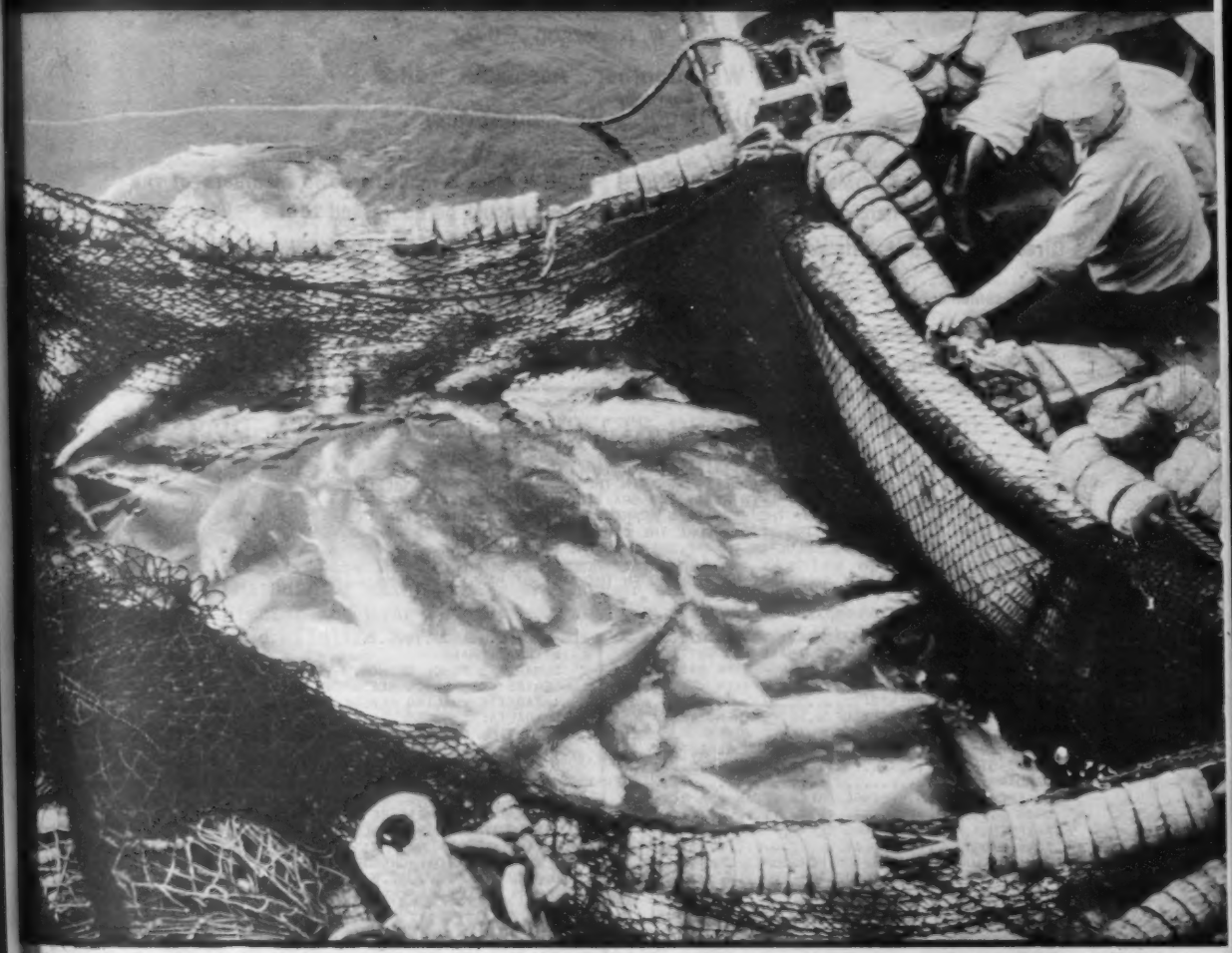
COMMERCIAL FISHERIES REVIEW



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United States Department of the Interior
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DEPARTMENT OF THE INTERIOR
OSCAR L. CHAPMAN, Secretary

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ALBERT M. DAY, Director

COMMERCIAL FISHERIES REVIEW

A REVIEW OF DEVELOPMENTS AND NEWS OF THE FISHERY INDUSTRIES
PREPARED IN THE BRANCH OF COMMERCIAL FISHERIES

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Applications for COMMERCIAL FISHERIES REVIEW, which is mailed free to members of the fishery industries and allied interests, should be addressed to the Director, Fish and Wildlife Service, United States Department of the Interior, Washington, 25, D.C.

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COVER: BLUEFIN TUNA IN THE PURSE SEINE OF THE WESTERN EXPLORER READY FOR BRAILING. THIS VESSEL WAS USED BY THE SERVICE'S BRANCH OF COMMERCIAL FISHERIES IN 1951 TO EXPLORE THE COMMERCIAL POSSIBILITIES OF A BLUEFIN-TUNA FISHERY IN THE GULF OF MAINE.

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COMMERCIAL FISHERIES REVIEW

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REPORT ON 1951 EXPLORATORY BLUEFIN-TUNA FISHING IN THE GULF OF MAINE

By John J. Murray*

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PART I - COMMERCIAL ASPECTS OF THE NEW ENGLAND BLUEFIN-TUNA FISHERY

INTRODUCTION

The initial phase of the bluefin-tuna exploratory fishing operation was conducted in the Gulf of Maine during the summer and early fall of 1951 by the Exploratory Fishing and Gear Development Section, Branch of Commercial Fisheries, U. S. Fish and Wildlife Service. Additional explorations will follow the initial work reported herein.

Development of a Gulf of Maine commercial tuna fishery has long appeared as a definite possibility. It is known that bluefin tuna (Thunnus thynnus) are present in New England waters during certain seasons of the year, appearing annually in schools which have been observed between June and October over areas ranging from the waters southeast of Cape Cod to the shores of Nova Scotia in the north. Knowledge of the movements, abundance, and availability of these fish for commercial fishing operations is lacking.

Early in 1950, interest in the possibility of establishing a tuna-processing industry utilizing Maine sardine-canning plants during periods of normal off-season shutdowns led to an appropriation by Congress for the investigation of the commercial potentialities of bluefin tuna in the Gulf of Maine. Successful establishment of such a fishery would substantially contribute to year-round employment in the sardine industry now operating on a seasonal basis.

FIG. 1 - WESTERN EXPLORER LEAVING PORT FOR FISHING GROUNDS, AUGUST 1951.

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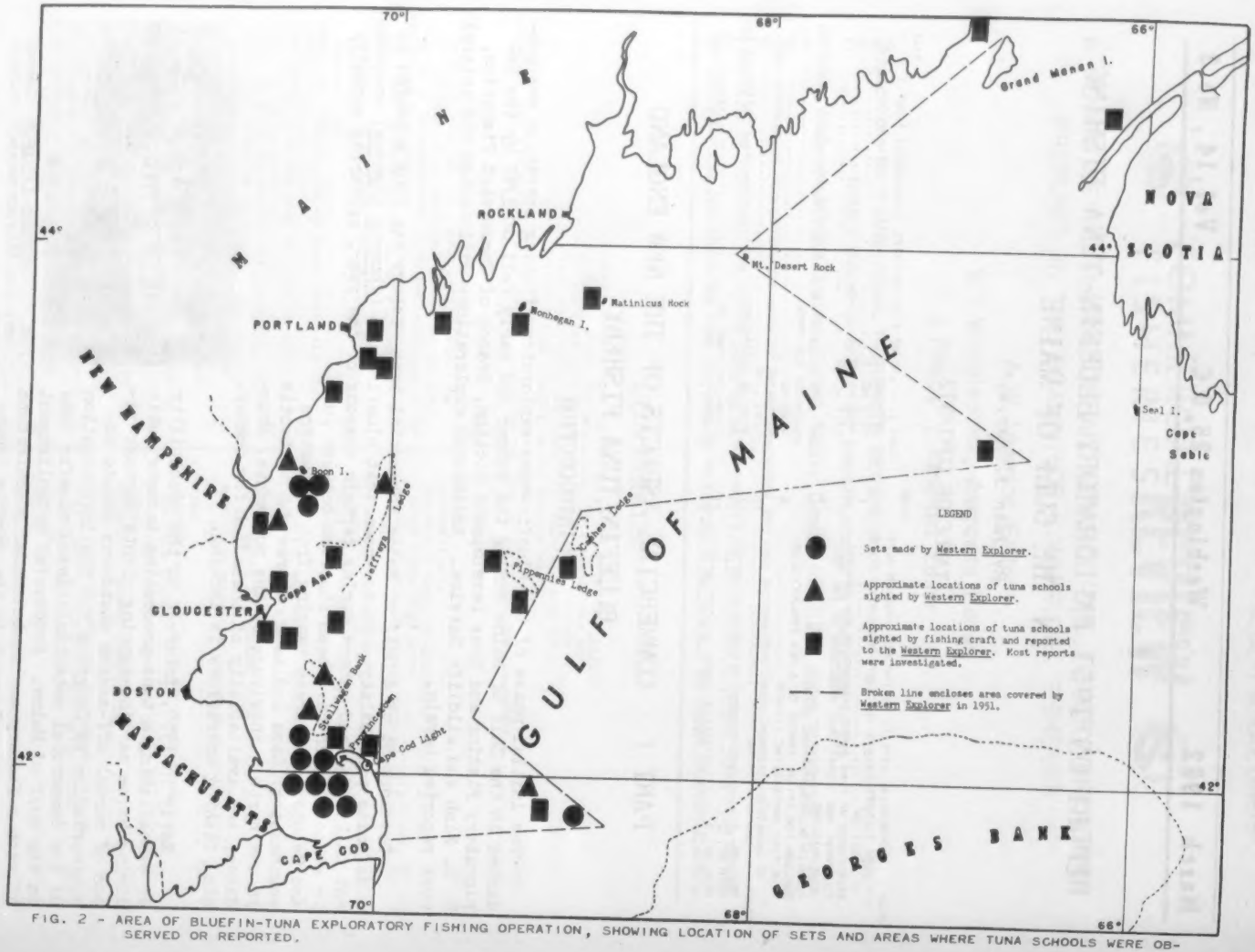


FIG. 2 - AREA OF BLUEFIN-TUNA EXPLORATORY FISHING OPERATION, SHOWING LOCATION OF SETS AND AREAS WHERE TUNA SCHOOLS WERE OBSERVED OR REPORTED.

The principal objectives of the program are:

1. TO DETERMINE THE LOCATION, EXTENT, AND RANGE OF BLUEFIN-TUNA CONCENTRATIONS IN NEW ENGLAND COASTAL WATERS DURING THE SUMMER AND FALL SEASONS.
2. TO DETERMINE WHETHER THE BLUEFIN TUNA ARE CONSISTENTLY AVAILABLE IN SUFFICIENT QUANTITIES TO WARRANT EXPANDED COMMERCIAL FISHING OPERATIONS.
3. TO TEST VARIOUS FISHING METHODS AND EQUIPMENT AND TO DETERMINE THE MOST EFFICIENT METHODS FOR CAPTURING TUNA IN COMMERCIAL QUANTITIES.

In view of the proven effectiveness of purse seining in the capture of pelagic fish, especially successful in the Pacific Coast tuna fishery, this method was selected for use during the 1951 season. The M/V Western Explorer, which had engaged in some seining operations for bluefin tuna from the port of Gloucester, Mass., during 1938, was chartered for a four-month period.

FIG. 3 - MASTHEAD MAN ON LOOKOUT FOR TUNA SCHOOLS.

A tuna purse seine measuring 330 fathoms in length and 33 fathoms in depth was shipped from California, and an experienced tuna-seining captain, Sam Braco, and three fishermen were hired for the operation. Additional experienced mackerel-seine fishermen were recruited in Massachusetts to complete a full crew of ten men.

The initial trip started on June 23 and operations were completed on October 3. During that period, eight trips were completed and 180,000 pounds of bluefin tuna were seined. The smallest catch was seined in the vicinity of Boon Island, Maine, on August 24 and comprised 41 large tuna with an average weight of 230 pounds each. The largest catch was made on September 17 in the waters approximately 60 miles southeast of Cape Cod Light, and totaled 120,000 pounds of tuna with an average weight of 33 pounds.

FIG. 4 - TUNA SCHOOL IN CAPE COD BAY, JULY 1951. (NOTE THAT SCHOOL CAN BE SEEN ALMOST IN CENTER OF PHOTOGRAPH.)

BACKGROUND OF TUNA PURSE SEINING IN NEW ENGLAND

Table 1 - U. S. Landings of Bluefin Tuna, 1930-1950

Year	Atlantic Coast	Pacific Coast	Total	Year	Atlantic Coast	Pacific Coast	Total
	(In Thousands of Pounds)				(In Thousands of Pounds)		
1950	3/	2/2,762	3/	1939	949	11,836	12,785
1949	2,738	4,390	7,128	1938	1,824	17,728	19,552
1948	2,997	6,529	9,526	1937	1,023	12,694	13,717
1947	1,087	20,838	21,925	1936	1/	18,925	
1946	1,184	22,032	23,216	1935	566	25,173	25,739
1945	1,374	20,594	21,968	1934	1/	18,358	
1944	829	20,344	21,173	1933	448	561	1,009
1943	481	10,178	10,659	1932	318	1,071	1,389
1942	827	12,845	13,672	1931	321	3,534	3,855
1941	1/	9,519		1930	422	21,921	22,343
1940	1,155	19,970	21,125				

1/NO FISHERY STATISTICAL SURVEY CONDUCTED.
2/PRELIMINARY.
3/NOT AVAILABLE.
SOURCES: 1930-38: BUREAU OF FISHERIES, U.S. DEPARTMENT OF COMMERCE, FISHERY INDUSTRIES OF THE UNITED STATES, ANNUAL REPORTS; 1939-49: FISH AND WILDLIFE SERVICE, U.S. DEPARTMENT OF THE INTERIOR, FISHERY STATISTICS OF THE UNITED STATES, ANNUAL REPORTS.

Table 2 - Bluefin-Tuna Landings by M/V Western Explorer at Gloucester, Massachusetts, 1938 1/

Date	Pounds
July 19	60,000
August 1	18,000
August 3	50,000
August 4	29,000
August 7	44,000
August 8	21,000
August 17	3,000
August 22	50,000
Total	275,000

1/TRIPS LANDED ON AUGUST 1 AND AUGUST 17 WERE FROM CAPE COD BAY. ALL OF THE OTHER CATCHES WERE MADE IN IPSWICH BAY. IN SEPTEMBER THE VESSEL TURNED TO MACKEREL FISHING, AND WAS SOLD TO CANADIAN INTERESTS IN JANUARY 1939 FOR EMPLOYMENT IN THE NEWFOUNDLAND HERRING FISHERY.
NOTE: FROM BOSTON DAILY FISHERY PRODUCTS REPORTS ISSUED BY THE MARKET NEWS SECTION OF THE SERVICE'S BRANCH OF COMMERCIAL FISHERIES. FIGURES ARE DAILY "HAILS" AND MAY VARY SLIGHTLY FROM ACTUAL WEIGH-OUTS.

For many years various people have called attention to the numbers of bluefin tuna that appear each year in New England's coastal waters. Although interest in a potential tuna fishery has been stirred by this knowledge, no extensive organized efforts have ever been made by industry to exploit this resource. Bluefin-tuna production in the area has been limited to catches made by small fishing boats and by the fish traps located in Cape Cod Bay.

Table 3 - Landings of Tuna by Santa Maria, 1938, 1939, and 1940

1938 Date	Pounds	or No. Fish	1939 Date	Pounds	1940 Date	Pounds
July 19 ..	14,000		July 10 ..	3,000	July 29 ..	100,000
July 30 ..		500	July 11 ..	4,000	Aug. 6 ..	13,500
Aug. 5 ..	35,000		July 14 ..	8,000	Aug. 21 ..	30,000
Aug. 6 ..	9,000		July 22 ..	19,000	Aug. 23 ..	23,000
Aug. 8 ..	21,000		July 27 ..	17,000		
Aug. 11 ..	18,000		Aug. 2 ..	14,000		
Aug. 15 ..		120	Aug. 3 ..	6,000		
Aug. 17 ..	65,000		Aug. 5 ..	25,000		
Aug. 22 ..	36,000		Aug. 6 ..	5,000		
Sept. 15 ..	23,000		Aug. 8 ..	27,000		
Sept. 21 ..	35,000		Aug. 9 ..	40,000		
			Aug. 12 ..	35,000		
			Aug. 18 ..	9,000		
Totals ...	256,000	& 620		212,000		166,000

NOTE: FROM BOSTON DAILY FISHERY PRODUCTS REPORTS ISSUED BY THE MARKET NEWS SECTION OF THE SERVICE'S BRANCH OF COMMERCIAL FISHERIES. FIGURES REPRESENT DAILY "HAILS" AND MAY VARY SLIGHTLY FROM THE ACTUAL WEIGH-OUTS.

Some steps by industry aimed at greater utilization of the fishery were undertaken from 1937 to 1941 when from two to five commercial fishing craft operated from the port of Gloucester and achieved fair success in capturing tuna by purse-seining methods. Included in this fleet during the 1938 season was the M/V Western Explorer, a Pacific Coast-type tuna purse seiner, equipped with a large tuna seine and accessory fishing equipment proven successful in Pacific Coast tuna seining. Other vessels used mackerel seines. Most successful of these was the Santa Maria. (Catch records of the Western Explorer and the Santa Maria are shown in tables 2 and 3.)

EQUIPMENT AND OPERATIONAL PROCEDURE OF THE 1951 EXPLORATIONS

The 75-foot Pacific Coast purse seine-type Western Explorer was equipped with a large tuna seine, set and hauled from a turntable on the stern. The vessel represented a distinct departure from the New England-type mackerel seiner. Full engine controls, a pilot wheel and compass located both in the pilothouse and outside on the bridge forward of the house, allowed the boat to be operated from this spot while cruising and setting for fish.

The deckhouse, located well forward, provided galley accommodations and berths for ten men on the main deck, while on the top deck a small cabin aft of

the pilothouse provided space for the captain's berth, a chart table, and radiotelephone. A depth indicator was part of the vessel's equipment, with the recording dial mounted in the wheelhouse. A small radio direction finder was also installed in the wheelhouse.

The ship was powered with a 200 horsepower Diesel engine, which also furnished the power for operation of the purse winch located midships aft of the deckhouse. The hold provided space for approximately 75 tons of iced fish.

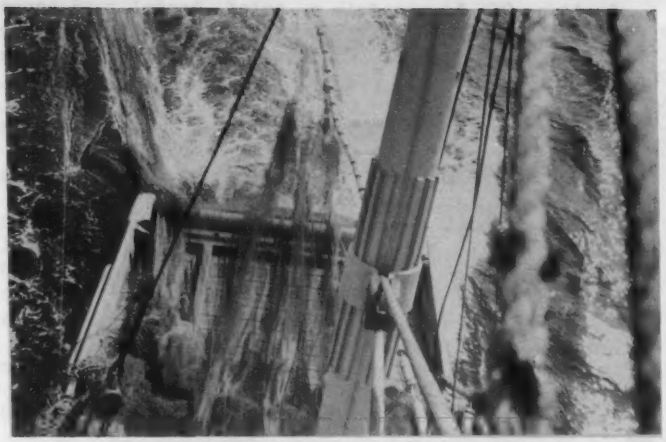


FIG. 5 - SETTING SEINE FROM TURNTABLE (NOTE PURSE LINE IN LEFT-HAND CORNER.

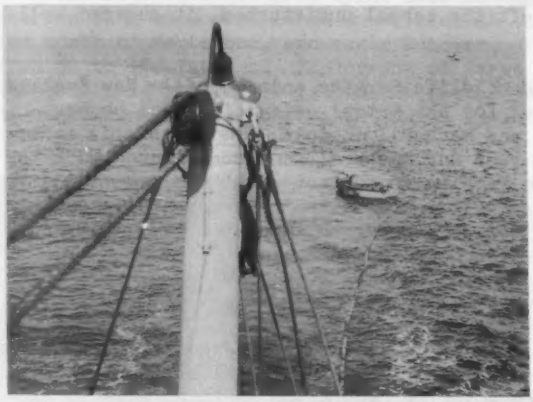


FIG. 6 - SKIFF HOLDING END OF SEINE WHILE SETTING.

A standard Pacific Coast-type tuna purse seine, measuring approximately 330 fathoms in length and 33 fathoms in depth, stretched-mesh measure, was employed. Details of the nets construction are included in the section entitled "Description of Tuna Purse Seine and Accessory Equipment."

Normally, tuna seiners carry 11 crew members, and the Western Explorer had facilities for this number of men. A captain and three fishermen were recruited from the Pacific Coast tuna fishery while the balance of the crew was recruited from Atlantic Coast mackerel fishermen. Personnel of the U. S. Fish and Wildlife Service were aboard the vessel on all trips and assisted the crew during seining operations.

Program plans envisaged operations under conditions closely akin to current commercial practices of the New England mackerel-seining fleet.

FIG. 7 - SKIFF MAN MAKING FAST THE EXTENSION PURSE LINE TO END OF SEINE.

FIG. 8 - PURSE RINGS AND LEAD LINE STRETCHED OUT ON DECK AFTER PURSING.

Reconnaissance cruises were carried out in Gulf of Maine waters from July to October. Spotting areas where tuna were found in commercial abundance, and tests on the effectiveness of a large tuna purse seine in capturing bluefin tuna schools were conducted. Before setting, the schools were circled slowly by the seine boat at a distance of 100 to 200 yards to determine the size of the school, direction and movement of the fish and inspection of water currents in relationship to the wind. If this maneuver left the school undisturbed, it augered well for a successful set.

An agreement between the Fish and Wildlife Service and many of the New England mackerel purse-seine operators provided for the mutual relay of visual observations regarding the locations of tuna and mackerel schools. Results of this agreement proved valuable in locating both tuna and mackerel, and contributed much to the success of the Western Explorer in keeping in contact with tuna concentrations. This phase of the program grew with each trip, necessitating a day-long radio watch to handle the calls coming from seiners, draggers, and sports fishermen from Cape Cod all along the coast and as far north as Nova Scotia.

RESULTS OF SCOUTING AND SEINING OPERATIONS

The Western Explorer left Boston for her initial trip on June 23 and completed eight trips before returning to Boston on October 3. The vessel spent 81 days at sea, steaming a total of 695 hours, and covering over 4,700 nautical miles in Gulf of Maine waters.

Bluefin-tuna schools were observed on all voyages. A total of 12 sets was made, eight of which yielded 180,000 pounds of bluefin tuna. These fish were landed at Gloucester, Massachusetts. In two of the unsuccessful sets, the schools were completely surrounded by the seine but the fish were lost because the lead line fouled on the bottom and the ship's main clutch failed to operate the purse winch.

Observations made during the season disclosed bluefin-tuna schools ranging over a wide area, extending from a point approximately 60 miles southeast of Cape

FIG. 9 - TUNA IN SEINE BEFORE BRAILING. POLE IS USED TO HOLD SEINE OPEN DURING PART OF THE OPERATION.

Cod Light to the waters around Boon Island, Maine--a distance of 110 nautical miles. Reports on tuna schools sighted by fishing craft operating in Gulf of Maine waters extended this range of occurrence to areas close to Nova Scotia shores--over 200 nautical miles east and south of the New England Coast.

Small-size fish comprised the great majority of the tuna captured and observed in the area. Only a small percentage (6 percent) of the total catch was composed of fish over 50 pounds live weight, with catches of fish in the 25- to 33-pound live-weight size range predominating. Visual observations of tuna schools and actual measurements of fish captured in coastal waters east and south of Cape Ann Light reveal that no large fish were found below this point. Conversely, no small fish were found in the coastal waters and north of Cape Ann. There appeared to be a distinct separation of the small- and large-size groups, roughly coinciding with the inshore waters northeast of a line extending east-south-east from Cape Ann Light. However, this generalization cannot be applied to offshore waters in view of reports received from creditable sources of tuna schools composed of small-size fish, observed north of Cape Ann Light on Fippennies Ledge, Cashes Ledge, and Jeffrey Bank. While bluefin tuna in varying degrees of volume were observed over a wide range during the program, sizable concentrations of schooling fish adaptable to commercial seining were located in four distinct areas.

The South Channel area lying between Cape Cod and the southwestern edge of Georges Bank supported large quantities of tuna during the latter part of August, the month of September, and early October. In this region, water depths range from 50 to 100 fathoms. Employment of large seines (measuring not less than 300 fathoms in length and 30 fathoms in depth) is indicated for best results in seining the large schools comparable in size to those observed here during September 1951.

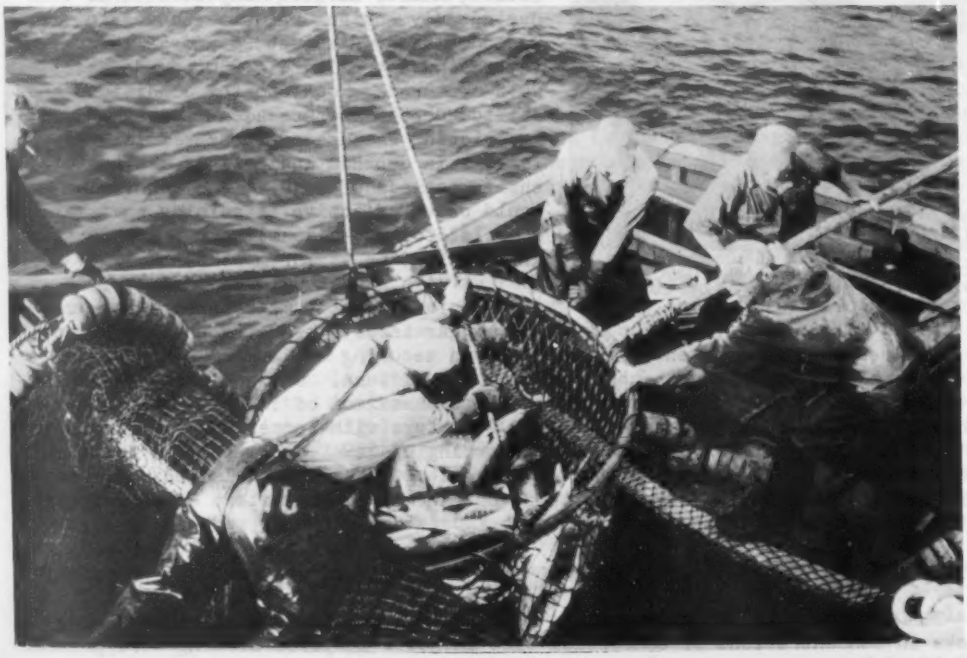


FIG. 10 - BRAILING TUNA FROM SEINE.

Varying amounts of small bluefin tuna were observed in the Cape Cod Bay region (comprising roughly the waters southeast of a line extending from Race Point Light northwesterly to the shore near Marshfield, Massachusetts) from late June until early September. The average schools observed contained between two and eight tons of 25- to 35-pound fish with occasional appearances of schools estimated to contain as high as 40 tons. Comparatively shallow depths (ranging from 8 to 28 fathoms) and heavy mud-bottom conditions preclude employment of deep, heavily leaded seines in this region. From observations gathered during the course of operations, it appears that a small seine not over 225 fathoms in length and 15 fathoms in depth is required for efficient operation in Cape Cod Bay.

FIG. 11 - DECKLOAD OF LARGE TUNA TAKEN OFF BOON ISLAND MAINE, BEING COVERED FOR PROTECTION FROM THE SUN.

Located near Cape Cod Bay and extending northeasterly towards Cape Ann for approximately 15 miles is the small fishing bank Stellwagen, but more generally known as Middle Bank. On five separate occasions schools of bluefin tuna were sighted near Stellwagen. Large bodies of bluefin tuna were sighted on the night of September 11 near the southern tip of the bank by the Gloucester mackerel-seining fleet. Generally smooth bottom and average depths of over 28 fathoms along the bank's perimeter indicate favorable conditions for tuna seining during periods of seasonal abundance.

Scouting operations in the waters between Isle of Shoals, New Hampshire and Boon Island, Maine, located many schools of tuna during July and August. One successful set was completed on August 24 and 41 large tuna (averaging approximately 230 pounds each) were captured. Rocky-bottom conditions and shallow depths are prevalent in this vicinity, restricting the use of purse seines over 20 fathoms in depth. Indications are that shallow seines of heavy large mesh twine would prove effective in seining the small schools of large-size bluefin found in this area during the summer months.

Surface water temperatures were recorded at regular intervals during the operations. Over 200 readings were taken, with emphasis on securing maximum coverage of waters in the immediate vicinity of school and individual tuna. Seasonal records exhibit a range of 22° F., from a minimum of 52° F. to a maximum of 74° F. Both schooling and individual bluefin tuna were observed in waters with temperatures as low as 58° F. and ranging upward to a maximum recording of 74° F. Temperature readings taken in waters lying north and east of the Isle of Shoals-Boon Island region were found to be consistently lower than those obtained from the waters south and east of Cape Ann, Massachusetts.

OUTLOOK FOR ESTABLISHMENT OF A NEW ENGLAND BLUEFIN TUNA PURSE-SEINE FISHERY

The results obtained during these operations demonstrate that bluefin-tuna stocks in concentrations of commercial size amenable to purse seining were present in Gulf of Maine waters from late June to early October.

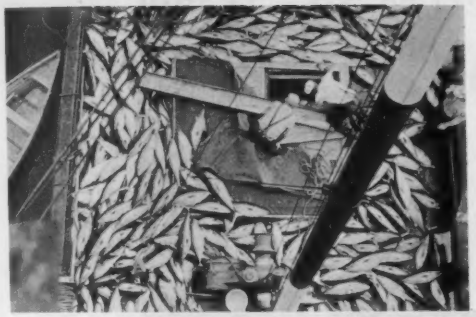


FIG. 12 - PREPARING TO STOW DECKLOAD OF BLUE-FIN TUNA IN VESSEL'S HOLD.

FIG. 13 - CREW REPILING NET ON TURNTABLE AFTER MAKING SET.

The success of the purse seiner employed in completing eight sets with an average haul of 22,500 pounds per set shows that the schools could be effectively fished. On 10 sets, out of a total of 12 made during the season, the schools were completely surrounded by the purse seine and subsequent loss of two of the encircled schools was due to failure of fishing equipment. Generally, the fish were fairly regular in their behavior and there was no difficulty in surrounding them with the seine.

Concentrations of tuna in volume attractive for seiners were found in four general areas--South Channel Region, Massachusetts Bay (Stellwagen Bank), Cape Cod Bay, Isle of Shoals-Boon Island region.

Tuna schools varying in size from an estimated 2 tons to 200 tons were observed from the Western Explorer within a radius of 60 miles from Cape Cod Light. Over 500 tons is a conservative estimate of the amount of fish observed in the schools sighted.

Conditions appear favorable for purse-seine operations in the South Channel area and around Stellwagen Bank where deep and heavy seines may be used without danger of fouling on the bottom. Large seine boats are indicated for use herein recognition of the size of the schools observed in the area in September 1951.

Cape Cod Bay presents possibilities during late June and July for a limited number of small seine boats employing shallow, lightly-leaded seines not over 225 fathoms in length. The length of time required to operate the gear and bail the catch would be limiting factors in production due to the prevalence of small schools noted here and the necessity for more sets per payload.

Conditions observed in waters northeast of Cape Ann, Massachusetts, differed sharply from those noted in the area south and east from this point. Small schools composed of large fish (weighing between 200 and 300 pounds) were found between the Isle of Shoals, New Hampshire, and Cape Neddick, Maine. With one or two exceptions, all schools were in shoal waters overlying rocky bottom. On two occasions, schools estimated to contain 10 tons of fish were sighted in deep water south-east of Boon Island. Invariably, the schools could be found on good fishing days surfacing north or south-west of the Island in depths varying from 7 to 15 fathoms. While seining in this area presents difficulties not found in southern Gulf-of-Maine waters, it appears that operations by persons familiar with local conditions, using shallow seines constructed of heavy twine with extra large meshes, could operate with reasonable success.

FIG. 14 - PREPARING TO UNLOAD TUNA CATCH IN PORT.

The difficulties attendant upon one boat in attempting to scout pelagic fish over an area approximating 20,000 square miles are obvious. While the Western Explorer was accorded excellent cooperation by the New England fishing fleet in spotting and reporting tuna schools, unquestionably a much greater measure of success would have been attained if additional tuna seiners had been active in the area.

A distinct advantage to tuna seiners operating in the Gulf of Maine is the relatively short distances between fishing grounds and landing ports. Within a distance of 100 nautical miles from areas where tuna schools were found, four major landing ports are located. Under such conditions, mechanically-refrigerated seiners, while desirable, are not a necessity and crushed ice affords a reliable and inexpensive means of preserving fish catches. After proper handling and adequate icing, bluefin tuna caught during the season were kept as long as seven days with little loss of quality. The fish were not gutted, and reports from boats who dressed their tuna catches, showed that this period could be safely extended for from three to four days without danger of spoilage.

Despite loss of many fishing days due to heavy fog and strong winds, it was not felt that weather conditions encountered during the season differed greatly from normal seasonal patterns. Weatherwise, purse seining differs from practically all other types of fishing in relation to conditions under which fishing operations may be prosecuted. Fairly calm weather is required for successful purse-seine operations. Operators in this fishery would be compensated for loss of fishing time regularly experienced each fishing season due to weather by heavy production during brief fishing periods.

While no attempt has been made here to evaluate any of the economic aspects for the successful establishment of a tuna industry in New England, experience gained from the limited work carried on in the area indicates that the basic raw material in the form of available stocks of bluefin tuna may be found in the coastal waters during the summer months.

PART II - LOG OF FISHING TRIPS (CONDENSED)

TRIP 1, JUNE 23-JULY 2

June 23: Cleared Boston harbor and set course for Cape Ann Light. Received reports that school tuna were sighted in Ipswich Bay on June 21 and on Cashe Ledge June 22. Masthead watch kept, but saw no tuna. Anchored in Ipswich Bay.

June 24-27: Scouted waters between Isle of Shoals, New Hampshire, and Monhegan Island, Maine. Weather unsettled with light fog and fresh easterly winds. No tuna schools sighted.

June 28: School containing about 5 tons of tuna sighted NW. of Boon Island, Maine. Fish 200- to 300-pound class, milling over rocky bottom in 12 to 16 fathoms of water. Weather favorable. Surface water temperature 58° F. Tuna remained at surface over 30 minutes swimming slowly. Water shallow and bottom too rocky for set.

June 29: Small school medium-large tuna sighted SE. of Boon Island in 18 fathoms over fairly smooth bottom. Made preparations to set, but school sounded. Sea calm with gentle winds. Surface temperature 57° F.

June 30: Large school of tuna estimated at 30 tons sighted in afternoon SE. of Boon Island in 38 fathoms. Fish sounded before set could be made. Same size school sighted 2 hours later in same general area. Set made but fish changed direction and escaped.

July 1: Small school of tuna sighted SW. of Boon Island over rocky bottom in 12 fathoms; too shallow to set.

July 2: Fresh NW. winds, rain, and fog. Too choppy to spot fish. Returned to Boston.

Summary of Trip: Six schools of tuna sighted within 2 miles of Boon Island, Maine. Four small schools over rocky bottom; too shallow to set. Two large schools in deeper water. Made 1 unsuccessful set. Vessel under way 94 hours, cruised about 600 nautical miles between Boston and Monhegan Island, Maine.

TRIP 2, JULY 7-15

July 7: After minor changes to gear and 2-day delay due to bad weather, left Boston. Set course for Cape Cod Bay after receiving reports from other trawlers that schools of tuna were seen there. Cruised 4 hours between Wood End-Race Point and Peaked Hill Bar Buoy. Saw many small schools of tuna. Fish small, average about 25 pounds. Largest school estimated about 2 tons. Tuna very erratic and not at surface long enough for set. Cruised north to Stellwagen Bank and sighted school estimated at 10 tons. Prepared to set but fish sounded. Ten small schools seen before dark, but too wild for seining.

July 8: Sighted many small schools, all wild and not at surface long enough to make a set.

July 9-10: Fresh south winds prevented scouting.

July 11: Scouted in the vicinity of Jeffreys Ledge, 15 miles NE. of Cape Ann Light. Small schools of tuna sighted but not at surface long enough for seining.

July 12: Proceeded to Cape Cod Bay. Fresh NW. wind precluded scouting.

July 13: Set made at 6:30 A.M.; caught 8 tons of tuna (from 25-35 pounds) off Wood End Light, Cape Cod Bay, in 18 fathoms. Made another set in afternoon on school of about 10 tons in about same location but shallower waters (15 fathoms). Lead line fouled in muddy bottom for 4 hours. Net ripped and all but 3 tons of tuna escaped. Anchored in Provincetown harbor to repair seine.

July 14: Set made in early morning on school of 10 tons in 13 fathoms about 3 miles off Truro shore, Cap Cod Bay. Lead line again fouled on muddy bottom. Seine ripped and tuna escaped.

July 15: Proceeded to Gloucester to discharge catch and to Boston to repair seine.

Summary of Trip: Twenty-two thousand and four hundred pounds of bluefin tuna caught in 2 sets. One other set unsuccessful due to fouling on mud bottom. Average weight of fish 30 pounds. Surface water temperatures ranged from 56° F. in Boon Island-Isle of Shoals area to 74° F. in Cape Cod Bay. Vessel under way 83 hours; covered about 600 nautical miles between Boon Island, Maine, and Cape Cod.

TRIP 3, JULY 25-31

July 25-26: Resumed operations in Cape Cod Bay after modifying seine for shallower waters. One web strip was removed reducing depth of seine from 33 to 27 fathoms. Approximately 1/3 of sinkers removed and replaced by 200 small, oval cedar floats to provide rolling motion to lead line. Fresh NE. and SW. winds hindered scouting.

July 27: Made set on school of about 5 tons of tuna in morning off Wood End Light in 18 fathoms. Complete miss as tuna changed course and evaded net. Made second set in afternoon and caught 7 tons of tuna (25-30 pounds) in 8 fathoms over smooth, sandy bottom.

July 28: Weather unfavorable for fishing.

July 29: Three schools of tuna sighted at noon off Wood End Light in 8 to 15 fathoms. Set made on largest school of about 40 tons, and fish surrounded perfectly. Main winch clutch broke down during pursing operations and lead line fouled in mud bottom, tearing net and allowing tuna to escape.

July 30-31: Proceeded to Gloucester to unload catch and to Boston to repair seine.

Summary of Trip: Three sets made in Cape Cod Bay. One caught 13,730 pounds tuna (25-30-pound class), one a complete miss, and one set on 40 tons lost because of mechanical breakdown. Surface

water temperatures ranged from 62° F. on Stellwagen Bank to 72° F. in Cape Cod Bay. Vessel under way 53 hours; steamed about 360 miles.

TRIP 4, AUGUST 4-14

August 4-5: Searched waters in vicinity of the Isle of Shoals and Boon Island. No tuna sighted. Radio reports indicated tuna schools still in Cape Cod Bay.

August 6: Cruised outside Cape Cod past Nauset Buoy and Chatham without sighting tuna. Small schools of tuna (20 to 30 fish) observed inside Race Point in late afternoon. Fish appeared to be chasing small bait fish. Too wild for seining.

August 7: Scouted waters outside Cape Cod without success. Sighted 6 schools off Wood End Light in afternoon and set on small school in 13 fathoms. Caught 5 tons, average weight 30 pounds.

August 8-9: Heavy fog prevented extensive scouting. Many small schools seen in Cape Cod Bay, but too small to warrant setting.

August 10: Fog cleared enough for one set off Barnstable Shore, Cape Cod Bay; 2 tons of tuna caught (30-pound average) in 13 fathoms.

August 11-14: Heavy fog impeded scouting. Proceeded to Gloucester to discharge catch.

Summary of Trip: Thirteen thousand and six hundred pounds tuna taken in 2 sets. Average weight about 30 pounds. Surface water temperatures ranged from 60° to 71° F. Vessel under way 68 hours covering about 450 nautical miles between Boon Island, Maine, and Chatham, Massachusetts.

TRIP 5, AUGUST 16-28

August 16-17: Scouted in vicinity of Fippennies Ledge, small fishing bank about 40 miles E. by S. of Eastern Point, Mass. Fresh winds and rough seas. No tuna sighted.

August 18-19: Set course for Monhegan Island, Maine, after receiving reports that tuna were seen there by small-boat fleet. Scouted vicinity of Boon Island en route. No tuna observed. Received report from trawler which sighted large schools of tuna about 56 miles S. by W. of Seal Island, Nova Scotia. Weather fair, so set course for Seal Island. Arrived in area of report after 20 hours steaming. Fresh NW. winds and choppy seas prevented effective scouting. Weather forecast unfavorable. Returned to Maine coast and anchored near Mt. Desert Light.

August 20-23: Scouted NE. along Maine coast toward Grand Manan Island. Strong tides in Grand Manan Channel. Surface water maximum temperature 54° F. Heavy fog encountered, no tuna sighted. Radio reports from fishing craft indicated school of tuna near Boon Island. Set return course and scouted areas around Matinicus and Monhegan Islands with no success.

August 24: Sighted small school of tuna in 30 fathoms about 2 miles SW. of Boon Island in morning. Made a set, but missed the school. Caught 5 tons of large tuna (230-pound average) in second set in 24 fathoms. Surface water temperature 61° F. Sighted at least 6 moderate-sized schools in afternoon SE. of Boon Island, swimming slowly but over rocky bottom too shallow to set (11-19 fathoms).

August 25-28: Scouted Isle of Shoals, Ipswich Bay, and Boon Island areas. Weather poor. No tuna sighted. Returned to Gloucester to discharge catch.

Summary of Trip: Nine thousand and twenty pounds tuna (average weight 230 pounds) caught in one set. One other set unsuccessful. Vessel under way 130 hours; covered about 1,000 nautical miles between Eastern Point, Mass., and Grand Manan Island, Canada.

TRIP 6, AUGUST 31-SEPTEMBER 15

August 31-September 5: Scouted offshore in vicinity of Fippennies Ledge. Failure of generator and air compressor forced return to port. Searched waters outside of Cape Cod Bay between Cape Cod Light and Chatham. Sighted only few scattered tuna. NW. winds and light fog hindered scouting. Weather colder and unsettled.

September 6-10: Searched Ipswich Bay and Isle of Shoals-Boon Island area. Small schools of tuna observed on 3 occasions. Fish moving rapidly and not at surface long enough for set. Weather unsettled.

September 11: Received radio reports from 2 Gloucester fishing vessels that large schools of tuna sighted off Race Point at 0200 September 10. Proceeded to area and kept night watch, but saw no tuna. Heavy fog prevented effective scouting.

September 12-15: Covered area near Boon Island and around Stellwagen Bank. No tuna seen. Weather very unsettled. Returned to port for repairs to generator.

Summary of Trip: Unfavorable weather combined with mechanical breakdowns caused loss of considerable fishing time. Vessel covered 850 nautical miles in 122 hours of sailing between Cape Porpoise, Maine, and Chatham, Mass. Surface water temperatures ranged from 61° F. near Boon Island on September 12 to 68° F. in Cape Cod Bay on September 3. No sets made. Few small scattered schools of tuna sighted for brief periods.

TRIP 7, SEPTEMBER 16-19

September 16: Set course for area approximately 60 miles SE. of Cape Cod Light, following reports from trawlers stating large schools of tuna there. Tuna feeding on scrap fish from trawl catch. Some vessels caught good amounts of tuna on hand lines baited with fresh herring. Catches of 15 tons and 13 tons by this method reported.

September 17: Arrived at position 56 miles SE. of Cape Cod Light in morning. Weather fair, slightly overcast sky, gentle southerly wind, calm sea, surface water temperature 68° F. Made set on large school of tuna estimated to contain over 200 tons. Necessary to cut school in half to avoid overloading seine. Trapped over 100 tons of tuna, but about 50 tons lost when cork line sank under heavy load and portion of net tore; 60 tons of tuna brailed in 4 splits. Fish averaged 33 pounds. During set, waters in vicinity "alive" with tuna; 10 large schools observed in course of 30 minutes.

September 18: Completed brailing and icing catch. Headed for port 15 hours after dropping skiff at beginning of set. Unloaded catch at Gloucester.

Summary of Trip: Sixty tons of tuna (average 33 pounds) caught in one set 56 miles SE. of Cape Cod Light. Vessel under way 32 hours; covered approximately 256 nautical miles.

TRIP 8, SEPTEMBER 23-OCTOBER 3

September 23: Set course for area 56 miles SE. of Cape Cod Light where large catch was made on Trip 7.

September 24: Many schools of tuna sighted in late afternoon. Schools estimated to contain 10-15 tons tuna in 25-50-pound class. Fish moving too fast and not staying at surface long enough for set. Weather unfavorable in evening. Proceeded to Provincetown for shelter.

September 25-29: Operations curtailed by extremely unfavorable weather. Strong NW. and SW. winds. Offshore operations impossible.

September 30-October 1: Searched waters offshore SE. of Cape Cod. No tuna sighted. Surface temperatures much colder, 52°-54° F. Weather unsettled, moderately choppy seas.

October 2: Received radio report of school tuna on Jeffreys Ledge, about 27 miles NE. of Eastern Point Light. Set course for that area.

October 3: Attempted scouting Jeffreys Ledge. Strong NE. wind and fog forced termination of operations. Docked at Boston in evening.

Summary of Trip: Worst weather of season encountered. Fresh to strong NW. and SW. winds and some fog. Weather unfavorable for purse seining on 7 out of 11 days. No sets made. School tuna sighted offshore from Cape Cod Light, but too wild for seining. Vessel under way 92 hours; covered about 600 nautical miles from 60 miles SE. of Cape Cod to Cape Ann, Mass.

Table 4 - Record of Sets, June 30 to October 17, 1951

Location	Date	Wind		Depth in Fathoms	Surface Water Temperature	Time of Set	Estimated Size of School (in tons)	Catch (in tons)	Remarks
		Direction	Force						
5 miles southeast of Boon Island, Maine	June 30	SE.	2	38	60° F.	1700	30	0	School changed course during set and escaped.
Off Wood End Light, Cape Cod Bay	July 13	NW.	2	18	74° F.	0630	8	8	Fish averaged 30 lbs. each.
Off Wood End Light, Cape Cod Bay	July 13	NW.	2	15	72° F.	1700	10	3	Seine hung up on mud bottom; lost most of school.
3 Miles Off Truro Shore, Cape Cod Bay	July 14	W.	2	13	72° F.	0800	10	0	Lost school when seine fouled on bottom and tore.
Off Wood End Light, Cape Cod Bay	July 27	NW.	2	18	68° F.	1000	5	0	Missed school.
Cape Cod Bay	July 27	NW.	2	8	72° F.	1500	7	7	Fish averaged 30 lbs. each.
Off Wood End Light, Cape Cod Bay	July 29	E.	2	12	71° F.	1200	40	0	Perfect set on large school; winch clutch broke while pursing; entire school lost.
Off Wood End Light, Cape Cod Bay	Aug. 7	E.	3	13	70° F.	1400	5	5	Fish averaged 30 lbs. each.
3 Miles Off Barnstable Shore, Cape Cod Bay	Aug. 10	N.	2	13	68° F.	1400	2	2	Fish averaged 30 lbs. each.
2 Miles SW. of Boon Island, Maine	Aug. 24	N.	2	30	60° F.	0930	5	0	Missed fish.
2 Miles SW. of Boon Island, Maine	Aug. 24	N.	2	24	61° F.	1215	5	5	Large tuna, averaged 230 pounds each.
56 Miles SE. ½ E. from Cape Cod Light	Sept.17	SSW.	2	80	68° F.	1030	200	60	Cut school in half and trapped an estimated 120 tons in seine. Lost 60 tons over cork line and through web failure. Fish averaged 33 lbs. each.

PART III - DESCRIPTION OF TUNA PURSE SEINE AND ACCESSORY EQUIPMENT

Purse seining is probably the most efficient and productive method currently employed for rapidly capturing large quantities of pelagic fishes. During 1947 the purse-seine fisheries in the states of Washington, Oregon, and California accounted for 57 percent of the total catch of fishery products in that region.[1/]

Tuna fishermen have practically standardized on construction of tuna seines, using cotton-web strips 100 meshes deep of 4½ inches stretched-mesh size (No. 42- or 48-thread seine twine) for the main body of the net, and a strip 50 meshes deep of 8 inches stretched-mesh size (No. 60- to 96-thread seine twine) for the bottom or lead-line strip. Variation of the mesh size and thread size is normal procedure in hanging a seine, depending on the size and species of tuna for which the seine is to be used, and the size of the purse seiner employed.

When stretched out, a tuna purse seine has the appearance of a long shallow blanket of webbing, buoyed on top by corks or floats strung on a strong rope attached to the webbing and weighted on the bottom with a light rope strung with lead sinkers. Attached to the lead line by means of short ropes called "bridles" and suspended at regular intervals below the lead line are circular metal rings through which a strong wire cable or "purse line" is woven. Following setting and encirclement of the schooling tuna, the "purse line" is used to draw together the bottom of the seine, and successful completion of this operation leaves the fish catch safely impounded in the seine, with their only escape route being over the top of the cork line. With the aid of a power boom, simultaneously part of the seine is repiled on the turntable at the stern of the boat and the fish catch is concentrated in one section of the seine. The concentrated fish are brailed from the seine into the ship's hold with a dip net.

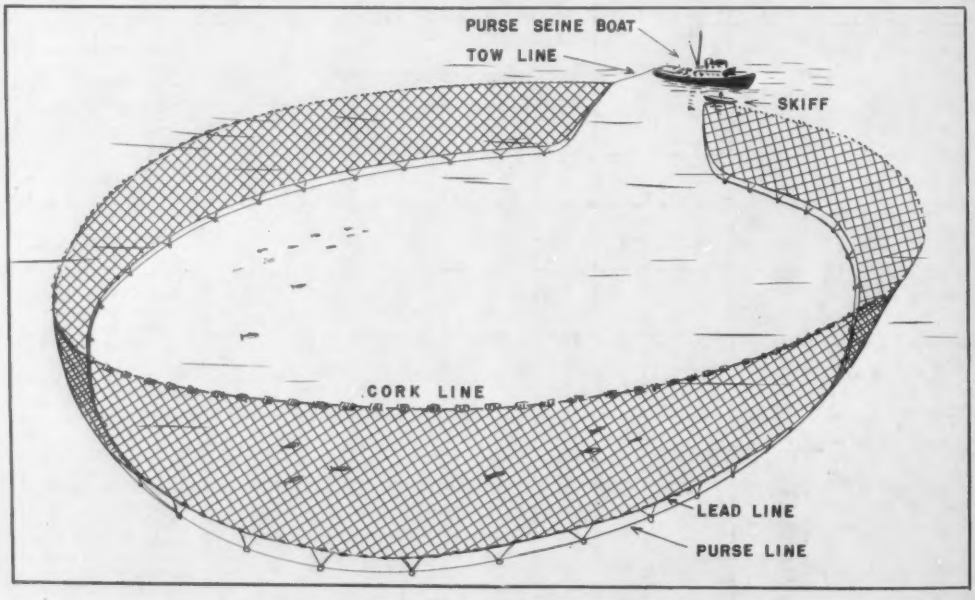


FIG. 15 - DIAGRAM OF PURSE SEINE WHEN SET.

1/ FISHERY STATISTICS OF THE UNITED STATES, STATISTICAL DIGEST NO. 21., U. S. FISH AND WILDLIFE SERVICE, 1947.

The tuna seine used by the Western Explorer was of the standard type used by the California tuna-seining fleet, and when hung ready for fishing the net had the following dimensions and components.

FIG. 16 - HANGING SEINE. LACING TOGETHER WEB STRIPS IN MIDDLE OF SEINE.

WEBBING

The body of the net consisted of five horizontal strips of cotton webbing approximately 330 fathoms in length, laced together forming a large rectangle. From the cork line down, the first four strips (each 100 meshes in depth) were of No. 42-thread medium-laid cotton seine twine, 4½ inches stretched mesh. The lead-line strip (50 meshes in depth) was of No. 84-thread medium-laid cotton seine twine, 8 inches stretched-mesh. Before lacing the strips together, they were treated with net preservative to protect the webbing and retard deterioration. Depth of the seine was approximately 33 fathoms stretched-mesh measure after hanging operations were completed.

In accordance with accepted practice, the seine was hung with the cork line a trifle shorter than the webbing, and the lead line about ten percent shorter than the cork line. This was accomplished by measuring ten fathoms on the cork line and nine fathoms on the lead line. Then ten fathoms of 4½-inch mesh was measured off along the selvage of the top web strip, stretching the netting taut, and adding 6 extra 4½-inch meshes (stretched allowance) and dividing this slack evenly along the cork line. By tracing the straight mesh down across the web strips to the lead line strip selvage and fastening this point to the nine fathoms of lead-line rope, an extra fullness is obtained in order to insure a proper pursing operation. Thus the actual ten fathoms of lead-line webbing is secured to nine fathoms of rope.

Later in the season the depth of the seine was decreased approximately six fathoms by the removal of an entire web strip.

CORK LINE

The number of cork floats used to buoy the net is quite variable, depending on the size of the net, size of tuna to be fished, and current and tidal characteristics of the waters in which the seine is to be operated. Generally, there are from 14 to 20 corks to each fathom of cork line, following the basic principle that sufficient floats should be uniformly distributed along the entire cork line to assure that ample buoyancy is provided to keep the net afloat with the cork line at the water's surface. The seine used in this operation had approximately 16 corks to each fathom of cork line. The corks were disc-like in shape (6 inches in diameter and 2 inches thick) with a hole in the center for insertion of a manila rope 2½ inches in circumference. The corks were usually spaced in three groups of four, each composing a "sausage" of twelve corks.

Corks were hung by picking up two 4½-inch meshes of the top web strip with 21-thread fine manila and placing four corks directly above the two meshes, then

FIG. 17 - ARRANGEMENT OF CORKS ON CORK LINE.

passing the manila line under the corks and hitching it firmly to the cork line. This procedure was repeated for two more four-cork groups, thus completing a "sausage." Between "sausages" a space of 16 inches was left on the cork line.

LEAD LINE

The leads or sinkers were evenly distributed along a 21-thread manila rope attached to the bottom web section. The leads were oval shaped weighing four ounces each and provided with a 5/8-inch hole through the longitudinal axis for insertion of 21-thread manila rope. This heavily-weighted line insures that the net will sink quickly to the limit of its depth following setting of the seine and encirclement of the schooling fish. Leads were hung in groups of threes with approximately 38 leads to each fathom of lead line. Heavy-tarred seine twine was used for hanging, with each tie on the lead line about 7 inches apart and each 8-inch mesh picked up twice by the hanging twine. During actual fishing operations, it was found that the lead line was too heavy for efficient operation. Early in the season the seine was overhauled and from 14 to 16 leads removed from each fathom of lead line, and small cedar floats placed along the lead line at regular intervals. This arrangement proved helpful when working the seine in shallow water and on soft and muddy bottom.

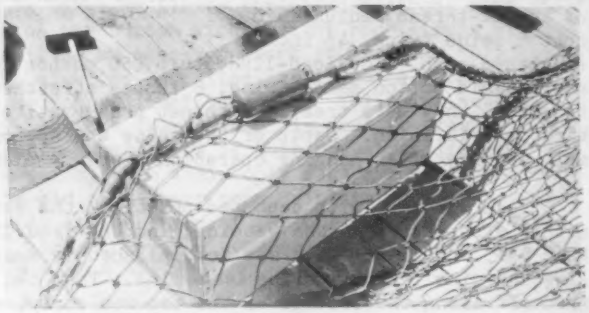


FIG. 18 - LEAD-LINE ARRANGEMENT, SHOWING LEADS AND TYPE OF CEDAR FLOAT USED TO LIGHTEN LEAD LINE WHEN USED ON MUDDY BOTTOM.

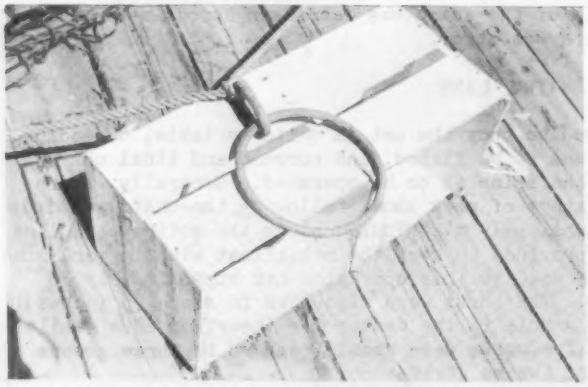


FIG. 19 - LEAD-LINE PURSE RING AND BRIDLE.

Galvanized-iron purse rings, measuring 9½ inches outside diameter, ½ inch thick, and fitted with a small closed loop were uniformly distributed along the entire length of the lead line. Each ring was fastened at the loop to the middle of a 15-foot long "bridle." The "bridles" were made from 18-thread manila rope and the ends were made fast to the lead line with several hitches of heavy-tarred seine twine. A distance of 12½ feet was left between "bridle" ends on the lead line and the same distance was left between consecutive "bridle" lines. Seventy lead-line purse rings were used in hanging the seine.

PURSING ARRANGEMENT

The purse line of galvanized steel wire measured about 330 fathoms in length and was divided into three sections. The two end sections were approximately 115 fathoms long of 1/2-inch diameter wire, while the middle section was of 5/8-inch-diameter wire, 100 fathoms in length, joined to the end sections by means of swing links. This division of the cable facilitated handling and coiling the wire after pursing was completed and assured that the stronger middle section of the cable would be in a position to support the weight of the purse rings and lead line when hoisted inboard by the power boom.

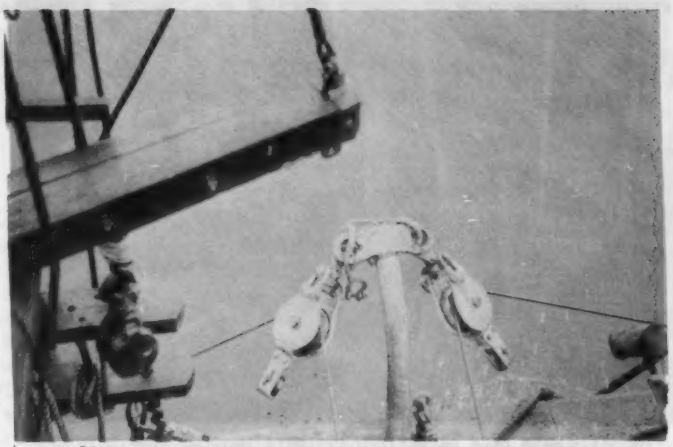


FIG. 20 - PURSING OPERATIONS SHOWING PURSE LINE PASSING THROUGH PURSE BLOCKS.

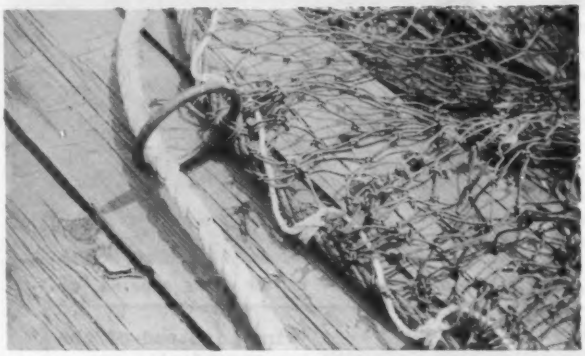


FIG. 21 - BREAST LINE AND BREAST RING.

BREAST LINES

During the haul it was necessary to lift the lead line up to the corks by pulling up the breast lines, the lower ends of which were fastened to the bottom of the net at a point about 1/2 to 1-1/2 fathoms from the lead line, while the top ends were tied loosely to the cork line. The breast lines were of 2 1/2-inch-circumference manila rope, while the breast rings were made from 7/16-inch galvanized iron and measured 4 inches inside diameter. The breast lines were passed through a series of metal rings fastened directly along the end of "up and down" lines on the extreme ends of the seine.

CORK LINE PURSING

Along the entire length of the cork line, approximately 80 bridle ropes were spaced about 4 fathoms apart. Each bridle was from 18 inches to 20 inches long, made from 18-thread manila rope with a 7/16-inch by 4-1/2 inches

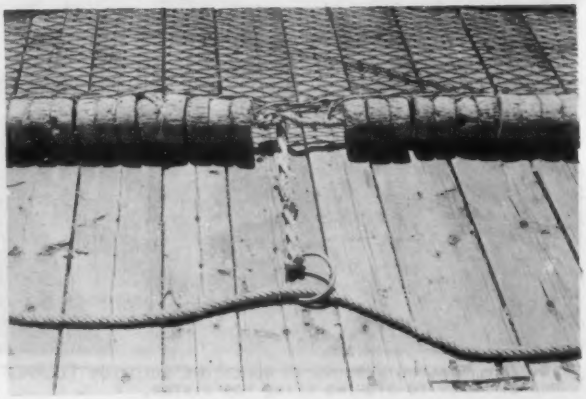


FIG. 22 - CORK PURSE LINE AND BRIDLE.

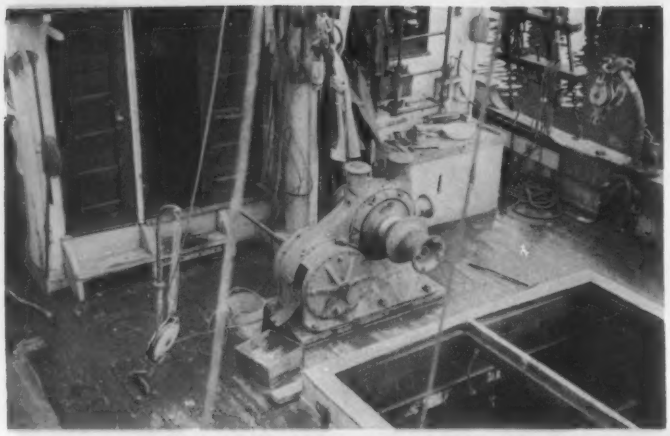


FIG. 23 - MAIN DECK OF WESTERN EXPLORER SHOWING PURSING WINCH AND PURSING DAVIT.

galvanized purse ring attached in the middle by means of a half hitch. The bridles are necessary in order to facilitate net operations. Upon completion of the setting of the net, the corks have a tendency to gather around the bow and stern of the boat, bunching up the net and impeding drying up operations. About 30 fathoms of 2-1/2-inch-circumference manila rope is a permanent fixture through approximately seven purse rings, covering a section of the net about 30 fathoms long. One end of the rope is fastened to the cork line while the other end is hitched loosely to the cork line in a spot within reach of the bow man who controls the pursing by means of the bow anchor winch.

When the corks gather around the boat, the loose end of the rope is pulled in and this procedure tends to keep the corks gathered at the bow of the boat and fastened securely. The same procedure is followed when the corks bunch around the stern of the boat, with the exception that the line is then pursed on the pursing winch instead of the anchor winch.

FIG. 24 - SKIFF END OF SEINE SHOWING "CANADIAN LINK."

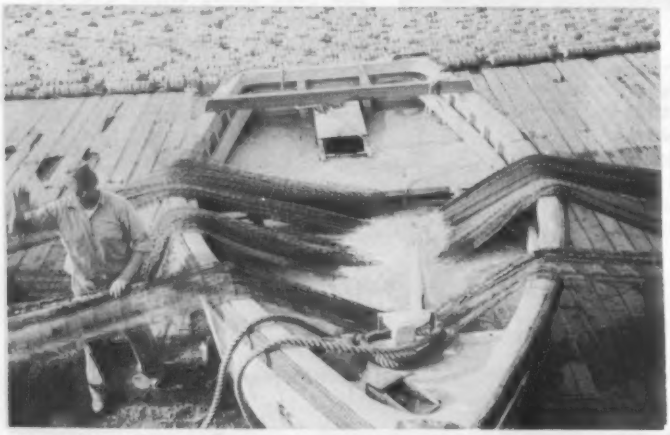


FIG. 25 - RINSING WEBBING IN BLUESTONE SOLUTION (COPPER SULPHATE) PRIOR TO STORING SEINE FOR WINTER.

An additional 30 fathoms of 1/2-inch wire is used upon completion of the setting to speed the transfer of the skiff end of the main purse line to the pursing winch. Before the circling maneuver of the seiner around the school fish is completed, one end of the wire attached to a light heaving line by a snap-hook arrangement is passed through the forward pursing davit outside the rigging and given to the bow man. When the seiner approaches

the skiff, the bow man throws the heaving line to the skiff man who secures the wire to a short pennant made fast to the cork line and signals to the winchman, who purses the wire on the winch and pulls the cork line up to the vessel's rail. Upon reaching the rail, the cork line is made fast to the main rigging, the main purse line is released from a device called a "Canadian Link," and both ends of the purse line are pursed simultaneously until the purse rings are safely up to the pursing davit.

SKIFF

The heavy, flat-bottom skiff used to assist in fishing operations is an important part of a purse seiner's equipment. In addition to its use in starting the seine off the turntable while setting the seine, the skiff is used to support the net during hauling and brailing operations and as a tow-off boat to swing the purse seiner away from the net in the event that the action of the wind or tide places the boat in a position making hauling operations difficult or impossible. Practically all the skiffs employed in the California tuna fishery are equipped with either gasoline or Diesel engines. The skiff furnished with the Western Explorer was not powered and in the interest of efficiency and ease of handling, a built-in well was constructed and a heavy-duty outboard motor was installed. This motor proved invaluable in the course of fishing operations. The skiff measured 22 feet in length with an 8-1/2-foot beam and was constructed of heavy timber (see figure 7).

ACKNOWLEGMENT

To the Captains and crew members of New England fishing craft for valuable assistance accorded the Western Explorer in reporting locations of tuna schools.

PACKAGED FISH--1951

Production of fresh and frozen packaged fish (fillets, steaks, and split butterfly) in the continental United States during 1951 totaled 205,486,068 pounds, valued at $59,487,098 to the processor. This represents an increase of 7 percent in quantity and 11 percent in value as compared with 1950. The principal items produced were ocean perch (rosefish) fillets, (75,023,366 pounds, valued at $18,732,729) and haddock fillets (50,830,527 pounds, valued at $14,545,679).

The total production of groundfish (cod, cusk, haddock, hake, pollock) and ocean perch (rosefish) fillets during 1951 amounted to 148,786,162 pounds, valued at $38,463,887. Imports of these fillets during the year amounted to 87,042,081 pounds.

It is estimated that 620,000,000 pounds of round fish were required to produce the 205,486,068 pounds of packaged fish produced in 1951.

--C.F.S. No. 735

February 1952

REFRIGERATION: Freezing Fish at Sea, Defrosting, Filleting, and Refreezing the Fillets: Shipyard work was completed on repairs to the main engine and the auxiliary equipment on the trawler Delaware. The vessel will be dry-docked shortly for hull and underwater repairs. Further work will include expansion of the frozen-fish storage area and improvements in the fish-freezing equipment.

(Boston)

* * * * *

NUTRITION: Chemical and Physical Properties of Fish and Shellfish Proteins: During the last month work was initiated on the development of a method for the determination of drip in fish. Factors affecting the quantity of drip are being studied. The work should provide much needed information on the water retentivity of fish proteins and should serve as a basis for more fundamental studies.

Several procedures for determining drip in frozen fish have been proposed. One method is to thaw the fishery product in the open air and collect the liquid which remains. The amount of the liquid or the loss in weight of the fish represents the drip. There are many variations to this general method. Another procedure is to expose under pressure a uniform cut section of the fish. The water is pressed out and discarded. The loss in weight of the fish section is considered the drip. All present methods are rather empirical and are apparently only of value for control work.

It is our purpose in this work to develop a method for determining drip which will not alter the physical condition of the fish and which will approach conditions similar to those that occur in the normal handling of the fish. The pressure method for drip is, therefore, automatically eliminated from consideration.

Experience gained so far has indicated that under similar thawing conditions: (1) the amount of water released from fillets of the same species of fish varies from fillet to fillet; (2) spoiled fillets release more water than fresh ones; (3) the amount of water released will vary from one species of fish to another; (4) there is little difference in the amount of water released from large and from small Pacific oysters; and (5) within certain limits, there is little difference in the amount of water released from thawed oysters which were frozen at different rates. (These are preliminary results and, of course, must await further verification.)

Further studies on the factors affecting drip in fish indicate that the amount of water released under similar controlled conditions from the thawed head portions of frozen fillets was not significantly different from the thawed tail portion of the same frozen fillets. The results were an average of 2.8 percent water from the head portion and 3.3 percent water (or "drip") from the tail portion.

Additional studies are being carried out on the factors affecting the quantity of "drip" in an effort to provide basic information which will lead to a standard method for the drip determination. (Seattle).

* * * * *

BYPRODUCTS: Vitamin Content and Nutritive Value of Fishery Byproducts: Studies on the unknown growth factors in fishery byproducts were continued. Tests on the rockfish liver dialysate were made to determine whether it contained growth factors measured by the microbiological method. The cultural medium used was that described by Flynn, Williams, O'Dell, and Hogan, in the journal Analytical Chemistry 23, 180 (1951). The test organism was Lactobacillus casei.

When this medium was supplemented with the rockfish liver dialysate at concentrations ranging from 1 to 300,000 parts per million, a considerable increase in the growth rate of L. casei was noted. The maximum increase in growth was between 45-50 percent over the unsupplemented medium. The next step will be to determine whether this growth factor also applies to tests with chicks. A large batch of fish livers is being processed and it is expected that the finished dialysate will soon be ready for chick tests at Washington State College.

This demonstration that fish-liver dialysate contains a factor or factors which greatly stimulate the growth of Lactobacillus casei makes it possible to begin further fractionation experiments on the dialysate. These experiments will be directed toward the purification and eventual isolation of the unknown factor which shall be referred to in these reports as the L. casei fish factor. Ultimately, it is hoped that the L. casei fish factor will be shown to be the same factor as the one in fish meal which stimulates chick growth.

There are in general three techniques which can be used to purify and isolate naturally-occurring compounds on a micro scale. These techniques are: fractional precipitation, absorption chromatography, and partition chromatography. The most common is fractional precipitation. If it is possible to find a precipitant for the L. casei fish factor, then considerable purification of the factor can be made rather easily. A solvent which has been used extensively to precipitate the vitamins belonging to the water-soluble class is acetone. Consequently, an experiment was carried out to determine if the L. casei fish factor could be precipitated with acetone. Ten ml. volumes of a fish liver dialysate were placed in each of two 100-ml. centrifuge tubes which had been previously weighed. Eight volumes (80 ml.) of acetone were slowly added with stirring. The covered tubes were stored in a refrigerator for a week. The tubes were centrifuged for 10 minutes at 2,000 rpm. and the supernatant liquid was decanted off. The residual acetone was removed with a slow stream of filtered air. The tubes were placed in a vacuum desiccator for two weeks. They were then weighed.

The precipitate in each centrifuge tube was dissolved in water and quantitatively transferred to a 10 ml. volumetric flask. The flasks were diluted to the mark with distilled water. The L. casei assay procedure was then carried out with aliquots of the acetone-insoluble fraction added to the basal medium. The assay was made in triplicate.

The results show that the L. casei fish factor is present in the acetone-insoluble fraction and that maximum growth is obtained with approximately 0.02 g. of the acetone-insoluble material.

* * * * *

Riboflavin and niacin assays were completed on products from one pilchard meal plant which used an air-lift drier. The results are as follows:

Sample	COMPOSITION				
	Moisture	Oil	Solids	Riboflavin	Niacin
	Percent	Percent	Percent	Micrograms Per Gram	Micrograms Per Gram
Air-Lift Drier Reduction Plant					
Raw Sardines	69.9	12.5	22.6	5.3	97
Press Cake	49.5	4.1	46.4	2.8	39
Stickwater	86.1	7.0	6.9	8.0	245
Meal	13.3	7.0	80.0	2.6	42

(Seattle)

* * * * *

ANALYSIS AND COMPOSITION: Composition and Cold-Storage Life of Fresh-Water Fish. Additional data on the composition of sheepshead and blue pike were obtained and are presented in the following tables.

Composition of Sheepshead (Aplodinotus grunniens)

Sample Number	Length of Fish in Centimeters	Weight of Fish in Grams	Fillet Yield in Percent	Proximate Composition in Percent			
				Moisture	Fat	Protein	Ash
7	32	480	35.4	76.2	6.1	17.4	0.98
8	33	550	36.4	74.4	8.6	18.5	1.10
9	35.5	580	35.3	74.7	8.3	19.1	1.15
10	35	565	38.9	74.2	8.2	17.7	1.02
11	36	645	34.4	75.3	6.5	17.8	1.07
12	36	690	31.9	75.9	7.0	17.6	1.04
13	37.5	740	33.1	72.2	8.1	19.1	0.98
14	38.5	760	35.5	75.1	5.6	18.8	1.00
15	45	1160	26.7	76.6	2.7	19.0	1.16
16	54	2545	31.4	75.0	7.3	18.8	1.03

Composition of Blue Pike (Stizostedion vitreum glaucum)

Sample Number	Length of Fish in Centimeters	Weight of Fish in Grams	Fillet Yield in Percent	Proximate Composition in Percent			
				Moisture	Fat	Protein	Ash
7	28	165	43.6	79.4	0.75	19.1	1.24
8	30	195	42.0	80.2	0.91	19.3	1.26
9	27	155	43.2	79.4	0.95	19.5	1.31
10	28	175	44.0	80.0	0.73	19.3	1.25
11	30	220	45.4	79.6	0.81	19.1	1.18
12	29.5	220	45.4	79.9	0.90	19.4	1.15
13	32	245	45.7	80.1	0.78	19.3	1.38
14	30	200	45.0	80.3	0.90	18.9	1.20
15	30.5	217	41.5	79.7	1.00	19.3	1.28
16	28.5	192	46.9	79.6	1.19	19.4	1.18

(Seattle)

TECHNICAL NOTE NO. 18 - PROXIMATE COMPOSITION OF THE CLASSIFIED TRIMMINGS FROM PINK SALMON

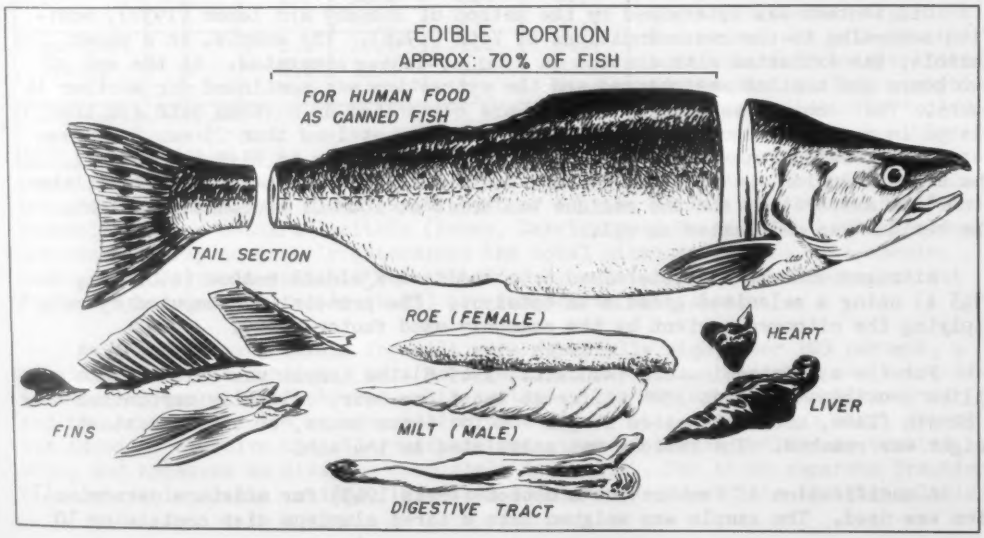
ABSTRACT

SAMPLES OF TRIMMINGS FROM PINK SALMON WERE SECURED FROM A KETCHIKAN, ALASKA, CANNERY DURING EACH OF THREE CANNING SEASONS. THE TRIMMINGS WERE SEPARATED INTO EIGHT COMPONENTS: HEADS, COLLARS, FINS, TAILS, LIVERS, EGGS, MILT, AND DIGESTIVE TRACTS. THE PROXIMATE COMPOSITION - OIL, PROTEIN, ASH, AND MOISTURE - WAS DETERMINED FOR EACH CLASSIFIED PORTION.

INTRODUCTION

Progress toward the goal of complete utilization of the wastes from Alaskan salmon canneries has been slow, partly because the problems involved and partly because the prospects were not fully known. Therefore, an important phase of the Ketchikan Fishery Products Laboratory program has been research to secure basic technical data concerning the raw material. Data on the available quantities of each of the separated parts of the salmon cannery trimmings have been reported (Magnusson and Hagevig 1950).

The present paper reports on an incidental analytical study of trimmings from the most abundant salmon, the pink or humpback (Oncorhynchus gorbuscha). The pink salmon raw materials had been collected at a Ketchikan cannery during three seasons in connection with other research projects. It was believed that it would be of interest to determine the proximate composition of these lots of trimmings even though it was realized that the batches of trimmings available for analysis were not necessarily representative of all types of pink salmon cannery waste available in southeastern Alaska. The proximate composition - oil, protein, ash, and moisture contents - was determined for each of eight sorted components of the trimmings: heads, collars, fins, tails, livers, eggs, milt, and digestive tracts.



SOURCE OF SAMPLES

During 1946, 1947, and 1948 several representative samples of trimmings were secured at a Ketchikan, Alaska, salmon cannery which handled only trap-caught fish. The collections were made from the flumes that carry the trimmings away from the butchering and cleaning equipment--the "header" and "Iron Chink." The trimmings were allowed to drain free of excess water and were transported immediately to the laboratory, where they were carefully sorted. The "header" section of the waste was hand-butchered to separate the head from the collar portion. That part of the liver, if any, in the collar was removed and added to the liver portion of the Iron Chink trimmings. The portion "fins" included the ventral fins of the fish with the adjacent skin and flesh as cut by the Iron Chink. The collar portion included the pectoral fins. Each season's composite sample represented trimmings from a minimum of 100 fish. The separated trimmings collected in 1946 were finely ground and well mixed, and then representative samples were sealed in half-pound cans. Some of the canned samples were preserved by processing for 90 minutes at 242° F., and the remaining samples were preserved by storing at 0° F. Since the processed samples were packed in hermetically-sealed containers, it is unlikely that processing would affect the proximate composition of the material in the cans; therefore, no differentiation was indicated in the data for the processed and the frozen samples. Trimmings collected in 1947 and 1948 were frozen and stored in five-gallon cans at 0° F. Later the material was partially thawed and then ground and mixed. Representative samples were taken for immediate analysis or saved in sealed one-pound cans stored at 0° F. All analyses were carried out during the summer and fall of 1948.

ANALYTICAL METHODS

The analytical methods employed were based on those in the Methods of Analysis of the Association of Official Agricultural Chemists and the Journal of the Association of Official Agricultural Chemists. Each sample to be analyzed was transferred, as completely as possible, from the can to a blendor jar and thoroughly blended to a creamy fluid or a uniform paste. Portions of this blended sample were weighed out for the subsequent analyses.

Oil content was determined by the method of Stansby and Lemon (1937), modified according to the recommendations of Voth (1946). The sample, in a paper thimble, was extracted with acetone in a Bailey-Walker apparatus. At the end of two hours the acetone was changed and the extraction was continued for another 14 hours. The combined acetone solutions were evaporated on a steam bath and then placed in a vacuum oven at 100° C. for three hours at less than 25 mm. Hg. pressure. The residue was treated with anhydrous ethyl ether to dissolve the oil. The ether solution was filtered through sintered glass into a weighed flask; the ether was evaporated; and the residue was dried at 100° C. to constant weight. The residue was calculated as oil.

Nitrogen content was determined by a modified Kjeldahl method (A.O.A.C., 1945 A) using a selenized granule as catalyst. The protein was computed by multiplying the nitrogen content by the commonly-used factor, 6.25.

For the ash determination (A.O.A.C., 1945 B) the sample was weighed into a silica crucible, dried at 130° C. for at least one hour, carefully carbonized over a Bunsen flame, and then heated at 550° C. for three hours, or until constant weight was reached. The residue was calculated as the ash.

A modification of Veschezerov's method (Tubis 1943) for moisture determination was used. The sample was weighed into a tared aluminum dish containing 10

grams of washed and muffled sand. The sample and the sand were well mixed. After a preliminary drying in an air oven at 100° C. for 1.5 hours, the drying was completed at 135° C. for one hour. The loss in weight was calculated as moisture.

DISCUSSION OF PROCEDURES AND RESULTS

Table 1 - Proximate Composition of Classified Pink Salmon Trimmings from Trap-Caught Fish at Ketchikan, Alaska

Parts of the Trimmings	Season Lot Number	Proximate Composition			
		Oil	Protein	Ash	Moisture
		Percent	Percent	Percent	Percent
Heads	A	15.9	12.5	3.7	68.2
	B	11.8	13.1	3.3	71.6
	C	12.4	13.0	3.9	70.9
Collars	A	10.5	17.5	2.6	71.2
	B	9.8	17.2	2.4	70.9
	C	11.3	17.1	2.9	70.3
Fins*	A	-	-	-	-
	B	10.5	16.7	3.6	71.4
	C	13.7	17.7	3.7	66.8
Tails	A	6.7	18.4	3.3	73.6
	B	6.0	19.2	4.7	70.3
	C	7.3	19.4	5.1	68.8
Livers	A	4.6	16.5	1.7	79.1
	B	3.7	16.7	1.6	78.7
	C	3.8	16.2	1.6	80.6
Eggs	A	12.1	26.3	1.9	60.0
	B	10.9	24.8	1.9	62.1
	C	10.2	23.2	1.7	65.2
Milt	A	1.7	17.1	2.2	82.1
	B	1.8	18.4	2.6	80.6
	C	1.9	17.5	2.4	81.7
Digestive Tracts	A	3.1	12.6	1.1	84.7
	B	2.8	13.5	1.0	83.0
	C	3.0	13.8	1.0	84.2

*THIS PORTION INCLUDED THE VENTRAL FINS WITH THE ADJACENT SKIN AND FLESH AS CUT BY THE IRON CHINK.
NOTE: - INDICATES NO DATA.

Table 1 presents the results of the proximate analyses of the pink salmon trimmings samples for each of three seasons. Each value in the table is the average of triplicate determinations on a composite sample of the samples taken at intervals during the season at the one cannery. The three results to be acceptable were required to have a difference range of less than the following: oil, 0.25 percent; protein, 0.2 percent; moisture, 0.2 percent; ash, 0.15 percent. Most of the triplicates exhibited ranges of less than half these limits.

The analytical procedures employed gave satisfactorily reproducible results. However, the proximate analysis totals (oil, protein, ash and moisture) frequently exceeded 100 percent. The excess was often much more than could be attributed to the limits of the analytical procedures. The "oil" as reported here probably included substances not strictly oil, yet extractable by acetone and soluble in ether. For example, cholesterol was probably a minor constituent of all the "oils" and the egg "oil" was probably about one-third lecithin (Jones, Carrigan, and Dassow 1948). The Kjeldahl procedure fairly accurately determines the total nitrogen content of a sample. However, the "protein content" data obtained by multiplying the nitrogen content figures by a constant factor (6.25) are subject to criticism.

As the proximate totals for milt were especially high, over 103 percent, a sample of milt was subjected to a more detailed analysis. The milt was twice extracted -- 3 hours and 21 hours -- with acetone. The two extracts were combined and the acetone removed by evaporation on a steam bath. Anhydrous ethyl ether was added to dissolve the oil residue. The ether insoluble matter was treated with, and appeared to dissolve completely in, water. The three separate fractions (1) acetone insoluble residue, (2) ether-insoluble residue of the acetone-soluble

material, and (3) ether-soluble portion of the acetone-soluble material, were dried in a vacuum oven. The nitrogen and ash contents of each were then determined. The proximate composition data, expressed as percentages of the whole raw milt sample, are summarized in table 2.

Table 2 - Proximate Composition of Solvent-Separated Fractions of Pink-Salmon Milt

Fraction of Milt	Proximate Composition in Percent of the Whole Raw Milt				
	Dry Matter	Oil	Ash	Protein (Nx6.25)	Total of Oil Ash Protein
Acetone-Insoluble Residue	16.7	0.0	1.9	17.0	18.9
Ether-Insoluble Residue of the Acetone-Soluble Material	1.0	0.0	0.2	0.7	0.9
Ether-Soluble Portion of the Acetone-Soluble Material	1.8	1.8	0.0	0.3	2.1

The data demonstrate that the factor used for converting nitrogen to protein, 6.25, is far too large for use with milt. This would be expected since fish milt is unusually rich in arginine, an amino acid with a high percentage of nitrogen. Judging from the data in table 2, the difference between the dry matter and ash, or 14.8 percent, is the maximum which the protein content could be. Therefore, the assay figure of 17.0 percent for protein is too high, and the conversion factor for this sample of milt cannot be higher than $\frac{14.8}{17.0}$ X 6.25 or about 5.5. The nitrogen content of the ether-soluble portion indicates that, if the nitrogen were present only as lecithin, then this phospholipid made up about half of the total "oil" in the milt.

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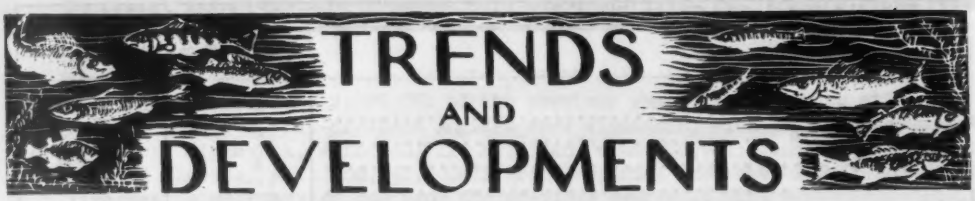
R. K. Whitaker, Chemist,
Formerly with the Alaska Fisheries
Experimental Commission.

Experimental work accomplished at Fishery Products Laboratory, Ketchikan, Alaska--operated jointly by the U. S. Fish and Wildlife Service and the Alaska Fisheries Experimental Commission.



Additions to the Fleet of U. S. Fishing Vessels

NOVEMBER AND DECEMBER 1951 AND ANNUAL TOTALS 1947-51: First documents as fishing craft during November 1951 were received by 52 vessels of 5 net tons and over--the same as in November 1950. California and the East Coast of Florida led with 7 vessels each, followed by Maryland, Virginia, and Louisiana with 4 vessels each.

During the first eleven months of 1951, a total of 747 vessels were documented for the first time as fishing vessels, compared with 768 vessels for the same period during 1950.

Vessels Obtaining Their First Documents as Fishing Craft, November and December 1951 and Annual Totals 1947-51

Section	November		December		T o t a l				
	1951	1950	1951	1950	1951	1950	1949	1948	1947
	Number	Number	Number	Number	Number	Number	Number	Number	Number
New England	4	1	1	-	36	36	35	52	55
Middle Atlantic ..	4	3	-	-	34	45	44	40	64
Chesapeake	8	7	4	4	36	81	87	59	83
South Atlantic ...	13	17	5	10	118	153	1/369	1/541	1/486
Gulf	7	13	12	11	173	167	1/	1/	1/
Pacific Coast	9	11	8	14	284	231	327	348	415
Great Lakes	4	-	-	1	25	12	38	51	45
Alaska	3	-	3	3	71	83	96	81	123
Hawaii	-	-	-	1	3	4	5	12	28
Puerto Rico	-	-	-	-	-	-	-	-	1
Unknown	-	-	-	-	-	-	1	-	-
Total	52	52	33	44	780	812	1,002	1,184	1,300

NOTE: VESSELS HAVE BEEN ASSIGNED TO THE VARIOUS SECTIONS ON THE BASIS OF THEIR HOME PORT.
1/DATA FOR SOUTH ATLANTIC AND GULF COMBINED PRIOR TO 1950.

During December 1951, a total of 33 vessels of 5 net tons and over received their first documents as fishing craft--11 less than in December 1950. The West Coast of Florida led with 6 vessels, followed by Washington with 5 vessels, and Virginia and Louisiana with 4 vessels each.

During 1951, a total of 780 vessels were documented for the first time as fishing vessels, compared with 812 vessels during 1950, and 1,002 in 1949 (see table).

Of the total vessels documented in 1951, 459 were built in 1951, 65 in 1950, and the rest (256) in years prior to 1950.

* * * * *

JANUARY 1952: A total of 35 vessels of 5 net tons and over received their first documents as fishing craft during January 1952--15 less than in January 1951. The East Coast of Florida led with 8 vessels, followed by California with 5 vessels, and Maryland, Georgia, Louisiana, and Alaska with 3 vessels each.

Vessels Obtaining Their First Documents as Fishing Craft, January 1952		
Section	January 1952	January 1951
	Number	Number
New England	1	2
Middle Atlantic	2	3
Chesapeake	4	2
South Atlantic	11	8
Gulf	6	18
Pacific Coast	7	13
Great Lakes	1	1
Alaska	3	3
Hawaii	-	-
Total	35	50

NOTE: VESSELS HAVE BEEN ASSIGNED TO THE VARIOUS SECTIONS ON THE BASIS OF THEIR HOME PORT.

Anglers' Fishing License Sales Break All Records

FISHING LICENSES SOLD IN THE UNITED STATES -- July 1, 1950 to June 30, 1951

STATE	RESIDENT	NON-RESIDENT	TOTAL	ANGLERS' FEES*
ALABAMA	152,544	10,236	162,780	$ 181,389
ARIZONA	65,030	16,998	82,028	267,830
ARKANSAS	223,218	76,961	300,179	545,350
CALIFORNIA	970,276	11,052	981,326	2,986,352
COLORADO	227,200	59,771	286,971	898,335
CONNECTICUT	79,839	3,809	83,648	356,613
DELAWARE	6,400	1,754	8,154	19,102
FLORIDA	180,113	106,691	286,804	691,625
GEORGIA	115,985	3,504	119,489	362,407
IDAHO	163,851	43,959	207,812	711,523
ILLINOIS	732,534	29,326	761,860	785,695
INDIANA	595,009	37,563	632,572	757,714
IOWA	440,667	10,312	450,979	673,127
KANSAS	238,780	6,269	245,049	373,889
KENTUCKY	293,651	62,950	356,601	587,434
LOUISIANA	72,044	11,024	83,068	111,708
MAINE	119,409	56,019	175,428	549,178
MARYLAND	70,286	12,588	82,874	133,618
MASSACHUSETTS	230,929	7,146	238,075	527,696
MICHIGAN	820,962	268,902	1,089,864	2,077,084
MINNESOTA	676,057	280,711	956,768	2,028,060
MISSISSIPPI	111,242	53,366	164,608	431,530
MISSOURI	593,142	49,252	642,394	1,406,742
MONTANA	180,822	28,115	188,737	582,101
NEBRASKA	199,823	8,408	208,231	439,297
NEVADA	20,818	19,583	40,401	149,936
NEW HAMPSHIRE	87,798	38,997	126,795	488,182
NEW JERSEY	130,416	10,485	140,901	443,673
NEW MEXICO	62,823	36,179	99,002	381,190
NEW YORK	691,082	32,143	723,225	2,068,019
NORTH CAROLINA	265,417	38,823	284,240	687,757
NORTH DAKOTA	63,780	510	64,290	33,420
OHIO	857,635	34,835	892,470	917,458
OKLAHOMA	351,234	40,822	392,056	976,293
OREGON	233,750	19,396	253,146	1,204,513
PENNSYLVANIA	618,621	19,789	638,410	1,309,579
RHODE ISLAND	22,359	382	22,741	62,330
SOUTH CAROLINA	144,306	6,219	150,525	195,994
SOUTH DAKOTA	110,765	18,597	129,362	181,000
TENNESSEE	449,653	189,447	639,100	1,002,140
TEXAS	331,417	5,736	337,153	559,584
UTAH	92,500	4,632	97,132	359,565
VERMONT	70,230	26,509	96,739	250,053
VIRGINIA	281,146	3,186	284,334	527,540
WASHINGTON	412,721	16,247	428,970	1,908,181
WEST VIRGINIA	202,101	4,792	206,893	637,562
WISCONSIN	746,653	282,702	1,029,355	2,035,820
WYOMING	106,354	48,726	155,080	774,955
TOTALS	13,871,278	2,155,421	16,026,699	$35,554,285

*Represents gross costs to anglers including special permits, trout stamps, etc. Combination licenses reported at full cost to angler as was done for hunters in hunting license tabulation, thus accounting for some overlapping on fees paid by sportsmen for such licenses.

More fishing licenses were sold in the United States, and more gross income was received from their sale during the fiscal year ended June 30, 1951, than in any previous fiscal year, the Secretary of the Interior was advised by the Director of the Fish and Wildlife Service on February 17.

Based on sales records supplied by the States for fiscal year 1951, the Service has completed compilations which show that 16,026,699 fishing licenses were sold by the 48 States to produce a gross revenue of $35,554,285. These figures break all previous records.

In fiscal year 1950, the licenses sold numbered 15,337,758, and the gross revenue amounted to $34,018,029.

Nonresident fishermen purchased 2,155,421 licenses in fiscal year 1951, an increase of 126,330 over the 2,029,091 of the previous year. States which attracted the greatest number of out-of-State anglers were Wisconsin, with 282,702 nonresident license sales; Minnesota, with 280,711; Michigan, with 268,902; Tennessee, with 189,447; and Florida, with 106,691. California reported the sale of 11,052 non-resident licenses, a decrease of 694 from the previous year's 11,746.

In the number of licenses issued, Michigan again headed the list, with 1,089,864. California, with 981,326, yielded second place to Wisconsin with 1,029,355. Minnesota ranked fourth with 954,768; Ohio was fifth with 892,470.

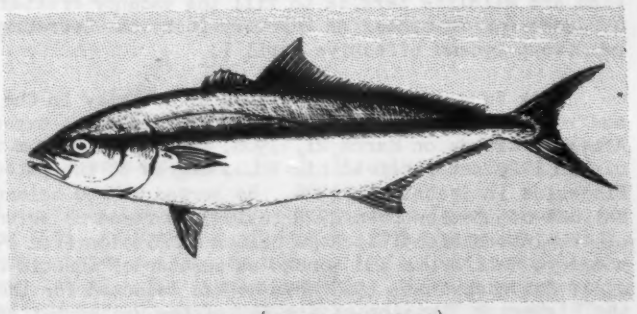
In Alaska the sale of 37,799 fishing licenses brought $109,063. Resident licenses numbered 27,066; nonresident, 10,733. One-half of the revenue from hunting and fishing license sales in Alaska is required by law to go into "miscellaneous receipts" of the United States Treasury, and the remainder goes into the Territorial school fund.

In the Territory of Hawaii, according to the Board of Commissioners of Agriculture and Forestry, only 392 fresh-water game fishing licenses were purchased at a cost of $963. Fishing licenses in Hawaii, however, are required for the taking of introduced fresh-water game species only. As the bulk of their sport fishermen fish in salt water, the number of licenses sold gives a most incorrect measurement of the degree of sport fishing activity in the Territory.

NOTE: ALSO SEE COMMERCIAL FISHERIES REVIEW, APRIL 1951, P. 30.

California Fish and Game Department Yellowtail Study

A yellowtail (Seriola dorsalis) study is being conducted by the California Fish and Game Department as a part of the Federal Aid to Wildlife Program, according to a report from that agency dated February 14. The Bureau of Marine Fisheries M/V N. B. Scofield left on this year's first cruise on January 18 and returned on January 31. The purpose of the cruise was to explore as many likely yellowtail fishing areas as possible; to find out how yellowtail can best be caught and handled for tagging; and to experiment with various types of tags and to find the best methods of marking yellowtail. The vessel operated on the West Coast of Lower California from San Bartolome Bay (Turtle Bay) to Punte Banda, including Cerros Island.



YELLOWTAIL (SERIOLA DORSALIS)

Live sardines for bait were caught in one lampara set at San Bartolome Bay. Yellowtail fishing was tried at fourteen places. All yellowtail catches were made near Cerros Island.

Three methods of catching yellowtail were tried: trolling, rod and reel, and hand lines. Live sardines, salted sardines, frozen squid, live Pacific mackerel, bone jigs, artifical squid, bonito strikers, and trolling feathers were all tried as lures or bait. All but two of the 78 yellowtail were taken on rod and reel, using live sardines. One fish was taken on a troll feather, and one caught with rod and reel using a salted sardine.

Fifty-three yellowtail were marked with Petersen disk tags made of cellulose nitrate, anchored just under the anterior end of the soft dorsal fin with .032 inch, type 302, stainless steel wire. These fish were released.

Fish and Wildlife Service Personnel Changes

ASSISTANT DIRECTOR TO RETIRE: The retirement of Milton C. James as Assistant Director of the Fish and Wildlife Service on March 31 was announced on February 21 by the Secretary of the Interior. James, who will be 55 on March 26, has applied for optional retirement after more than 30 years of Federal service.

MILTON C. JAMES

In addition to serving as Assistant Director of the Service, he has been a member of several international fisheries commissions and has acted as Deputy Administrator of the Defense Fisheries Administration since its establishment in December 1950.

JOHN L. KASK

JOHN L. KASK APPOINTED ASSISTANT DIRECTOR: The appointment of Dr. John L. Kask as assistant director of the Fish and Wildlife Service to fill the vacancy created by the retirement of Milton C. James was announced on February 26 by the Secretary of the Interior. The appointment became effective April 1.

Kask is a veteran of 25 years of activity in the field of fishery management and research and has had a breadth of successful experience. Born in Red Deer, Alberta, Canada on March 21, 1906, he graduated from the University of British Columbia in 1928 and received his Ph.D. degree at the University of Washington School of Fisheries in Seattle in 1936. He served on the scientific staff of the International Halibut Commission from 1929 to 1937 as research scientist and assistant director of the International Sockeye Salmon Commission from 1938 to 1943. From there he moved to California and served as curator of aquatic biology at the California Academy of Sciences until 1948 when he was selected for the post of Chief Biologist of the Fisheries Division of the FAO of the United Nations.

His first post with the Fish and Wildlife Service was as assistant director of the Service's Pacific Oceanic Fishery Investigations with headquarters in Honolulu. Recently he was transferred to Washington as Chief of the Office of Foreign Activities. During World War II he served as Captain and Major in the Army of the United States, and was associated for almost two years with the Natural Resources Section of SCAP during the early days of the Japanese occupation.

Federal Purchases of Fishery Products

FRESH AND FROZEN FISH PURCHASES BY DEPARTMENT OF THE ARMY, JANUARY 1952: Larger purchases of fresh and frozen fishery products by the Army Quartermaster Corps during January 1952 reflected the generally higher level of purchases evident during most of 1951. Purchases in January this year for the U.S. Army, Navy, Marine Corps., and Air Force amounted to 2,317,411 pounds (valued at $1,084,996)—4.1 percent higher in quantity but 6.5 percent lower in value than purchases in December 1951. Compared with January 1951, this January's purchases were considerably higher—35.9 percent in quantity and 48.1 percent in value.

Purchases of Fresh and Frozen Fishery Products by Department of the Army (January 1951 and 1952)

QUANTITY		VALUE	
January		January	
1952	1951	1952	1951
lbs.	lbs.	$	$
2,317,411	1,705,128	1,084,996	732,373

The average price per pound paid by the Army Quartermaster Corps for January 1952 purchases was 46.8 cents as compared with 43.0 cents during the same month a year earlier. In addition to the fact that there has been a general increase in the prices of fishery products, the increase is somewhat higher than the increase in prices. This shows that this year's purchases have consisted of some higher-priced items than was the case last year.

Metal Cans--Shipments for Fish and Sea Food, 1951

Total shipments of metal cans for fish and sea food during 1951 amounted to 105,704 short tons of steel (based on the amount of steel consumed in the manufacture of cans), which was considerably below 150,372 short tons of steel during 1950. Largely responsible for this drop in shipments of metal cans for fish and sea food were considerably lower packs of West Coast sardines and Maine sardines and a decline in tuna canning.

During December 1951, cans totaling 3,434 short tons of steel were shipped for use in canning fish and sea food as compared with 8,333 short tons in November 1951 and 18,157 short tons in December 1950.

NOTE: DATA CONVERTED TO SHORT TONS OF STEEL ARE ON THE BASIS OF 23.0 BASE BOXES OF STEEL.

Michigan's Great Lakes Commercial Fish Production, 1951

Commercial fish production from Michigan waters of the Great Lakes amounted to about 25,000,000 pounds during 1951, an increase of nearly 2,000,000 pounds over the 1950 catch of 23,153,000 pounds, states a February news bulletin from the Michigan Department of Conservation (see table). The final figure for 1951 may be somewhat higher, but it is not expected to approach the average 26,000,000-pound year. The record catch was over 32,000,000 pounds in 1927.

Led by a Lake Michigan record lake-herring haul of 4,802,000 pounds, this small food fish again accounted for the largest Great Lakes catch. The over-all lake herring catch of 8,913,000 pounds in 1951 was considerably higher than the 6,871,000 pounds for all waters in 1950. Lake Superior helped boost this total with over a

Fish Production in Michigan's Great Lakes Waters, 1950-51 (Preliminary)		
By Species	1951	1950
	lbs.	lbs.
Lake herring	8,913,000	6,871,000
Whitefish	1,358,000	2,725,000
Chub	2,944,000	2,427,000
Lake trout	2,149,000	2,425,000
Smelt	2,661,000	1,741,000
Other	6,975,000	6,964,000
Total	25,000,000	23,153,000

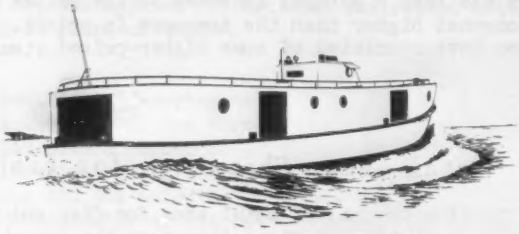
million-pound increase to 2,766,000 pounds. The previous Lake Michigan record year was in 1927 with 3,932,000 pounds.

Chubs moved up from third to second best producer, with 2,944,000 pounds caught in 1951 as compared with 2,427,000 pounds for 1950. With a fair increase, Lake Michigan again easily led the lakes with 2,810,000 pounds.

Jumping from seventh to third place were smelt with nearly a million-pound increase to 2,661,000 pounds. Lake Michigan continued to account for practically the entire catch. Smelt production has been steadily rising from 626,000 pounds in 1948 to the 1951 amount. The year's catch may approach the 1941 record year of 3,019,000 pounds because of fewer lake trout and extra fishing pressure further stimulated by good winter prices.

Whitefish fell from second to seventh place with only 1,358,000 pounds netted as contrasted to 2,725,000 pounds in 1950.

The prized lake trout dropped another notch from fourth to fifth place with nearly 2,149,000 pounds in 1951 as compared to 2,425,000 in 1950. Except for 3,200 pounds, the entire catch was from Lake Superior where the trout-destroying sea lamprey has not yet penetrated to any great extent.



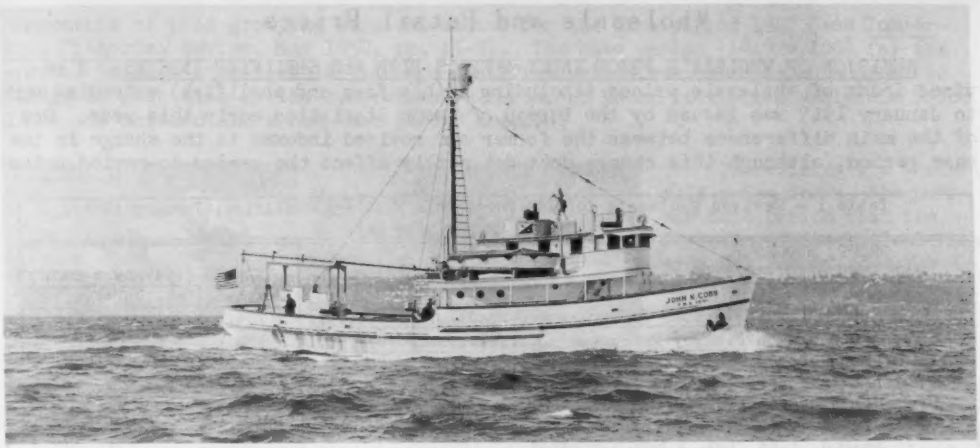
TYPICAL TYPE OF BOAT USED FOR FISHING ON THE GREAT LAKES. GILL NETS ARE THE MAIN TYPE OF GEAR USED.

With 23 different species taken, production (actually reported so far) by lakes was: Michigan, 12,744,000 pounds; Huron, 5,457,000; Superior, 5,323,000; and Erie, 1,178,000 pounds. (These do not total to 25,000,000 pounds as the tabulation by lakes is not complete.)

North Pacific Exploratory Fishery Program

"JOHN N. COBB" TO EXPLORE SHRIMP RESOURCES IN SOUTHEASTERN ALASKA: To ascertain commercial possibilities of shellfish resources in southeastern Alaska, the John N. Cobb left Seattle on March 3 for the fourth in a series of such exploratory cruises. This exploratory fishery vessel, operated by the Service's Branch of Commercial Fisheries, during this cruise will concentrate particularly on finding areas with shrimp in commercial quantities. On a similar exploratory trip in the spring of 1951, commercial concentrations of shrimp were found by the John N. Cobb in several areas.

Fishing will be conducted in Southeastern Alaska waters, and will start in the Lisianski Inlet and Cross Sound region. From there the vessel will fish to the southward in Chatham Strait and on the west coast of Baranof Island. These areas have not previously been fished by the John N. Cobb. A limited amount of fishing will also be carried on in Tenakee Inlet, Hood Bay, and Peril Strait to compare results with those obtained by the vessel in the same localities in the fall of 1950.



THE JOHN N. COBB, A VESSEL OPERATED BY THE SERVICE'S BRANCH OF COMMERCIAL FISHERIES, IS CONDUCTING EXPLORATORY FISHING IN THE NORTH PACIFIC.

Types of gear to be fished will include beam trawls, shrimp traps, and crab pots. Bottom characteristics will be determined by use of a recording depth finder, and oceanographic observations, including water temperatures, salinities, and bottom samples will be made at each fishing station.

Study on Handling and Freezing Shrimp at Sea Initiated

A study on handling and freezing shrimp at sea has been initiated by the Technological Section of the Service's Branch of Commercial Fisheries. The work will be carried out in the Gulf area using the facilities of the Branch's exploratory fishing vessel Oregon. The purpose of the study is to develop practical methods of handling and refrigeration of shrimp aboard vessel in order to provide fresh or frozen shrimp products of consistently good quality.

Among the items to be considered are:

(1) ICING SHRIMP ABOARD VESSEL--HANDLING SHRIMP PRIOR TO ICING AND PROPER ICING PROCEDURES (PROPERLY ICED SHRIMP WILL ALSO BE USED AS A CONTROL SAMPLE FOR THE SECOND PART OF THE STUDY ON FREEZING).

(2) FREEZING SHRIMP ABOARD VESSEL--WILL INCLUDE STUDIES ON HANDLING SHRIMP PRIOR TO FREEZING; FREEZING METHODS, SUCH AS IN BRINE, IN STILL AIR, OR IN BLOCKS; METHODS OF THAWING; AND FINALLY PACKAGING. PHASES OF THE WORK WILL CONSIDER THE FREEZING RATES AT DIFFERENT TEMPERATURES, SALT PENETRATION IN THE BRINE-FROZEN SHRIMP, AND KEEPING QUALITY OF THE VARIOUSLY FROZEN AND PACKED PRODUCTS.

It is hoped that the study will provide improved procedures for handling and icing of shrimp, using the facilities now available on shrimp vessels. Also, that it will indicate practical methods of freezing shrimp aboard vessel at sea that will provide consistently good-quality frozen products.

John A. Dassow, Chief, of the Fishery Products Laboratory, Ketchikan, Alaska, has been delegated to carry out the studies, and arrived at his headquarters at Pascagoula, Mississippi, in mid-March to begin the shrimp studies.

Wholesale and Retail Prices

REVISION OF WHOLESALE PRICE INDEX AFFECTS FISH AND SHELLFISH INDEXES: A revised index of wholesale prices (including edible fish and shellfish) extending back to January 1947 was issued by the Bureau of Labor Statistics early this year. One of the main differences between the former and revised indexes is the change in the base period, although this change does not really affect the period-to-period price

Table 1 - Revised Wholesale Indexes for Edible Fish and Shellfish, January 1952, with Comparative Data

GROUP, SUBGROUP, AND ITEM SPECIFICATION	POINT OF PRICING	INDEXES (1947-49 = 100)		
		Jan.1952	Dec.1951	Jan.1951
ALL FISH AND SHELLFISH (Fresh, Frozen, and Canned)		114.5	113.3	111.6
Fresh and Frozen Fishery Products:		125.1	122.7	114.0
Drawn, Dressed, or Whole Fin Fish:		136.4	133.2	122.9
Haddock, large, offshore, drawn, fresh	Boston	174.7	167.8	130.0
Halibut, Western, 20/80 lbs., dressed, fresh or frozen	New York City	102.2	101.4	121.1
Salmon, king, lge. & med., dressed, fresh or frozen	" " "	120.9	121.0	121.0
Whitefish, mostly Lake Superior, drawn (dressed), fresh	Chicago	156.2	112.0	119.7
Whitefish, mostly Lake Erie pound net, round, fresh	New York City	88.0	113.2	93.0
Lake trout, domestic, mostly No. 1, drawn (dressed), fresh	Chicago	129.1	129.1	116.8
Yellow pike, mostly Michigan (Lakes Michigan & Huron), round, fresh	New York City	99.7	101.3	110.7
Processed, Fresh (Fish and Shellfish):		111.9	111.6	104.8
Fillets, haddock, small, skins on, 20-lb. tins	Boston	154.9	149.4	115.9
Shrimp, lge. (26-30 count), headless, fresh or frozen	New York City	81.4	81.3	90.3
Oysters, shucked, standards	Norfolk area	136.1	136.8	118.7
Processed, Frozen (Fish and Shellfish):		110.5	106.2	100.1
Fillets: Flounder (yellowtail), skinless, 10-lb. pkg.	Boston	143.7	145.8	122.7
Haddock, small, 10-lb. cello-pack	"	122.7	114.2	82.0
Ocean perch (rosefish), 10-lb. cello-pack	Gloucester	125.2	125.2	132.7
Shrimp, lge. (26-30 count), 5-lb. pkg.	Chicago	84.8	78.0	82.0
Canned Fishery Products:		98.9	99.5	107.9
Salmon, pink, No. 1 tall (16 oz.), 48 cans per case	Seattle	109.6	109.6	127.3
Tuna, light meat, solid pack, No. ½ tuna (7 oz.), 48 cans per case	Los Angeles	81.2	81.2	93.0
Sardines (pilchards), California, tomato pack, No. 1 oval (15 oz.), 48 cans per case	" "	102.2	100.2	77.3
Sardines, Maine, keyless oil, No. ¼ drawn (3¼ oz.), 100 cans per case	New York City	102.7	110.5	66.0

comparisons shown by the index. For the revised index the calculation base period is the average of the three years 1947, 1948, and 1949.

Although the calculation base period (100 percent) for most groups and subgroups for the wholesale price index formerly was the average for the calendar year 1926, the indexes for edible fish and shellfish were based on the average for the calendar year 1947. A revision of the wholesale fish and shellfish index was made in 1949 and the revision was first reflected in the final index for fish and shellfish for December 1949. Since that time, the index for fish and shellfish and all

components of this grouping were calculated for the base period 1947 (see Commercial Fisheries Review, May 1950, pp. 45-9). The base period (1947 = 100) for the special indexes of wholesale fish and shellfish prices was established subject to change at such time as the comprehensive Bureau of Labor Statistics Wholesale Price Index was revised and a new base period adopted.

MODERN RETAIL MARKET.

In revising the wholesale price index, the postwar base period that the Division of Statistical Standards has recommended for all revised Federal index numbers has been adopted by the Bureau of Labor Statistics in its revised wholesale price index. Therefore, the fish and shellfish index as a group and its components will also be calculated for the base period 1947-49 = 100.

The revised index, beginning with January 1952, is calculated using prices as of one specified day each month instead of an average of prices as of each Tuesday during the month, which was the practice in computing the former index. Under the new method of computation, for each month the pricing date will be the Tuesday of the week including the 15th of that month. Thus, the index for January 1952 was calculated using prices for Tuesday, January 15, and the February index will be calculated using prices for Tuesday, February 12, and so on. This same procedure will be used for computing the index for edible fishery products instead of an average of prices as of each Tuesday during the month.

The weighting in the revised index is based on transactions in 1947, but as far as edible fishery products are concerned that is the same as the weighting for the former index series which was established in 1949.

WHOLESALE PRICES, JANUARY 1952: Generally higher prices for nearly all types of fishery products, except canned, were reported during January 1952 because of light supplies. Prices for all edible fishery products during January 1952 were 2.6 percent higher than in the same month in 1951 and 1.1 percent above the previous month. The edible fish and shellfish (fresh, frozen, and canned) wholesale price index for January 1952 was 114.5 percent of the 1947-49 average (see table).

Drawn, dressed, or whole fin-fish prices in January 1952 were 11.0 percent higher than during the same month a year earlier and 2.4 percent higher than the previous month. Fresh large offshore haddock prices during the month jumped another 4.1 percent above the previous month and were 34.4 percent above January 1951. There was a considerable price increase for whitefish at Chicago, and a slight increase for frozen Western halibut at New York City.

Processed fresh fish and shellfish prices in January 1952 were 6.8 percent above the same month a year earlier and 0.3 percent higher than the previous month. The main increase was in fresh haddock fillets which sold 33.6 percent above January 1951 and 3.7 percent above December 1951. Although shucked fresh oysters dropped slightly from December 1951 to January 1952, they were still 14.7 percent higher than in January 1951.

Processed frozen fish and shellfish prices for January 1952 were 10.4 percent higher than for the same month in 1951 and 4.0 percent higher than in December 1951. From December 1951 to January 1952 frozen shrimp prices rose 8.7 percent and frozen haddock fillet prices 7.4 percent and both of these items were 3.4 and 49.6 percent higher, respectively, than in January 1951. January frozen ocean perch fillet prices remained steady at the December level, but were 17.1 percent higher than in January 1951.

Canned fish prices in January 1952 dropped. The index for this subgroup during that month was 8.3 percent lower than for the same month a year earlier and 0.6 percent lower than for the previous month. There were no price changes for canned pink salmon and tuna from December 1951 to January 1952 and prices for both these items were below the same period in 1951—13.9 and 12.7 percent, respectively. Prices for canned California sardines rose during January, while Maine sardines dropped substantially.

RETAIL PRICES, JANUARY 1952: Prices paid by urban families of moderate incomes between mid-December and mid-January for all foods increased, according to the Bureau of Labor Statistics, U. S. Department of Labor. During the period, the retail

Table 2 - Adjusted Retail Price Indexes for Foods and Fishery Products, January 15, 1952, with Comparative Data

Item	Base	I N D E X E S		
		Jan.15,1952	Dec.15,1951	Jan.15,1951
All foods.....	1935-39 = 100	232.4	232.2	221.9
All fish and shellfish (fresh, frozen, & canned)..	do	351.5	351.2	345.3
Fresh and frozen fish.....	1938-39 = 100	298.3	296.7	283.0
Canned salmon: pink.....	do	471.2	475.1	493.7

price index for all foods went up 0.1 percent and it was 4.7 percent above mid-January 1951 (see table).

Retail prices for fishery products (fresh, frozen, and canned) increased the same as the "all foods" category—0.1 percent from mid-December to mid-January, but fishery products retail prices were only 1.8 percent higher than in mid-January 1951.

Fresh and frozen fishery products were mainly responsible for the increase in retail prices of all fishery products. The retail index for fresh and frozen fish climbed 0.5 percent between mid-December and mid-January to 296.7 percent of the 1938-39 average and this index was still 5.4 percent above the same period a year earlier.

Retail prices for canned pink salmon, which have been declining for the past several months, continued their downward trend. The index for canned pink salmon on January 15, 1952, was 0.8 percent below the previous month and 4.6 percent lower than in mid-January 1951.

International

SUBAREA 5 PANEL OF NORTHWEST ATLANTIC FISHERIES COMMISSION MEETS: The Panel for Subarea 5 of the International Commission for the Northwest Atlantic Fisheries (ICNAF) convened at Ottawa, Canada, on February 26, 1952, the U. S. Department of State announced. The United States Delegation was:

UNITED STATES COMMISSIONERS:

JOHN L. KASK,
CHIEF, OFFICE OF FOREIGN ACTIVITIES,
FISH AND WILDLIFE SERVICE,
DEPARTMENT OF THE INTERIOR.

BERNHARD K. KNOLLENBERG,
CHESTER,
CONNECTICUT.

FRANCIS W. SARGENT,
DIRECTOR, DIVISION OF MARINE FISHERIES,
DEPARTMENT OF CONSERVATION,
COMMONWEALTH OF MASSACHUSETTS,
BOSTON, MASSACHUSETTS.

ADVISORS:

HERBERT W. GRAHAM,
CHIEF, NORTH ATLANTIC FISHERY INVESTIGATIONS,
FISH AND WILDLIFE SERVICE,
DEPARTMENT OF THE INTERIOR.

HOWARD A. SCHUCK,
BIOLOGIST IN CHARGE OF GROUNDFISH INVESTIGATIONS,
FISH AND WILDLIFE SERVICE,
DEPARTMENT OF THE INTERIOR,
WOODS HOLE, MASSACHUSETTS.

OBSERVER FROM THE U. S. INDUSTRY ADVISORY COMMITTEE:

LEONARD O. WARNER,
PROVIDENCE, RHODE ISLAND.

The International Commission for the Northwest Atlantic Fisheries was established in accordance with the provisions of the International Convention for the Northwest Atlantic Fisheries, which was concluded at Washington on February 8, 1949, and which entered into force on July 3, 1950. The Commission is charged with the responsibility of keeping under continuous review all pertinent information concerning the international fisheries of the Northwest Atlantic Ocean; coordinating and disseminating all information concerning such fisheries; and making recommendations to governments on conservation measures deemed necessary to maintain such fisheries at a maximum level of sustained production. As stated in the Convention, the Commission is composed of panels for each of five subareas of the Northwest Atlantic Ocean. The Governments of Canada and the United States comprise the membership of the Panel for Subarea 5, which covers that portion of the total area adjacent to the New England coast.

The purpose of the forthcoming meeting was to determine whether members of Panel 5 should recommend to the full Commission the adoption of regulatory measures for conservation of the fisheries in Subarea 5. A joint report, containing preliminary recommendations for the regulation of fisheries in that area was prepared by Canadian and United States fishery scientists, and served as a basis of discussion at the Ottawa meeting.

If a recommendation proposed at this meeting is accepted by the International Commission for the Northwest Atlantic Fisheries, the commercial haddock fishery in the Georges Bank area off the New England coast will be brought under international regulation in an attempt to increase the yield.

Commissioners and advisors of ICNAFs' Panel 5 meeting at Ottawa have accepted a recommendation made by scientists of both countries that the mesh size of haddock-fishery nets should be increased from 2-7/8 to 3-3/4 inches. This increase in mesh size would allow the escape of unmarketable baby haddock. The change in mesh size is intended to prevent the destruction of large quantities of small haddock.

Canada and the United States are the only two countries holding membership on Panel 5. The recommendation of the Panel is to be submitted to the general meeting of the 10-nation commission to be held at St. Andrews, N.B., in June. If adopted by the Commission, it will be the first time in history that the high seas fishery of the Northwest Atlantic has been brought under conservation regulation. It is not expected that the regulation, in any case, will become effective until December 1 at the earliest.

The Georges Bank haddock fishery is one of the richest of the famous Northwest Atlantic "banks" and supports a large industry centered in the Boston and New Bedford ports of New England. The advance of modern fishing gear, particularly the trawl, along with natural biological fluctuations, resulted in a decline in the haddock stocks.

The conservation and development of the fish stocks in Subarea 5, which is the smallest of the five areas covered by the International Convention, have officially been under consideration since the ratification of the treaty in 1950. Subarea 5 extends along the New England coast from the Rhode Island-Connecticut line to the international border between Maine and New Brunswick.

Boats not fishing for haddock will be allowed up to 5,000 pounds of haddock or 10 percent by weight of their total catch.

The extensive scientific research already going on in connection with the haddock fishing of Subarea 5, the meeting agreed, would be continued to assess the effect of the new mesh regulation.

The Panel members also considered problems associated with the ocean perch (rosefish) landings. It was agreed that there would be continued investigation in this fishery with a view to later recommendations.

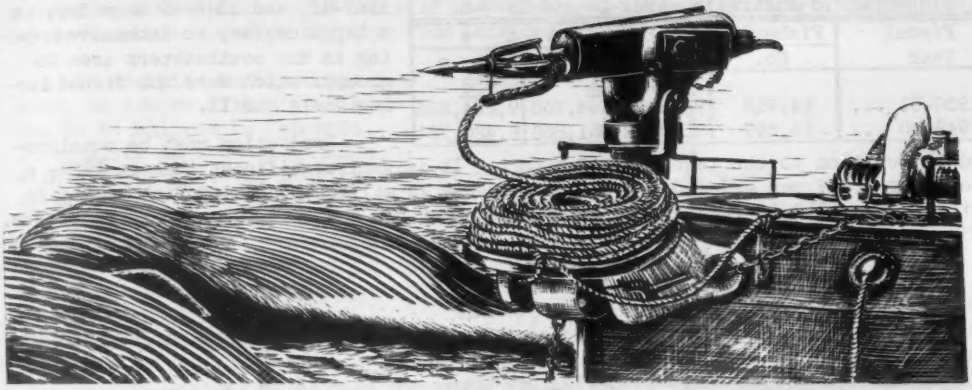
The meeting was under the chairmanship of Francis W. Sargent.

* * * * *

ANTARCTIC WHALING SEASON ENDS MARCH 5: The Committee of International Whaling Statistics has determined that the pelagic (open sea) catch of baleen whales in the Antarctic shall cease on March 5, at 12:00 p.m., according to notification received by the U. S. Fish and Wildlife Service. This determination constituted a forecast that the maximum catch-quota of 16,000 blue-whale units would have been taken by the above closing date. The 1951-52 pelagic season, which opened on January 2, will have lasted only 64 days, or 14 days less than the previous season.

The total number of floating factoryships engaged in baleen whaling this season is 19, the same as in 1950-51. However, the replacement of two of the factory-

WHALE HARPOON GUN



ships with newer and larger boats, the re-equipment of others, plus the enlargement of the catcher fleet by some 20 boats, has materially increased the catch potential of the present Antarctic operations. Thus, the attainment of the quota in the shorter period this year is due probably to more efficient operating techniques, additional catch and processing equipment, and possibly better hunting conditions, rather than an increase in the total supply of whales in the Antarctic. Due to the fact that whales grow fatter as the season progresses, the later opening date in 1951-52 may be responsible for a somewhat larger production of whale oil than in the previous season.

Australia

FISHERIES PRODUCTION DECREASING (1950-51): Despite a rapidly growing population with most of the immigrants coming from countries having comparatively high per-capita fish consumption, Australia's total production of fish and shellfish

Table 1 - Australian Fisheries Production, 1949-50 and 1950-51

Type	1950-51			1949-50		
	Quantity	V a l u e		Quantity	V a l u e	
	lbs.	£	US$	lbs.	£	US$
Fish	69,073,222	3,725,753	8,300,978	69,754,061	3,093,355	6,891,995
Spiny lobster (crayfish) 1/	13,614,789	852,012	1,898,283	13,193,862	737,665	1,643,518
Shrimp (prawn)	4,623,641	479,409	1,068,123	3,111,284	294,600	656,369
Other	41,823	1,394	3,106	514,008	46,792	104,252
	Bags	£	US$	Bags	£	US$
Oysters	42,688	336,058	748,737	55,530	403,320	898,597
	lbs.	£	US$	lbs.	£	US$
Total	2/87,353,475	3/5,394,626	3/12,019,227	2/86,573,215	3/4,575,732	3/10,194,731

1/PRODUCED PRINCIPALLY IN WESTERN AUSTRALIA, TASMANIA, AND SOUTH AUSTRALIA.
2/EXCLUDES OYSTERS, WHICH ARE MEASURED IN BAGS.
3/INCLUDES VALUES OF OYSTERS.

is decreasing, according to the November 1951 issue of the Fisheries Newsletter issued by the Commonwealth Director of Fisheries. Production has shown no firm tendency to rise since 1929. The peaks reached in the fiscal years 1946-47, 1947-48, and 1948-49 were due, in a large degree, to intensive trawling in the southeastern area on grounds which were not fished during World War II.

Table 2 - Number of Fishing Boats and Licensed Fishermen in Australia, 1949-50 and 1950-51

Fiscal Year	Fishermen	Boats		
	No.	No.	Value	
			£	US$
1950-51 ...	14,918	8,584	4,144,763	9,234,532
1949-50 ...	14,599	8,906	2,881,860	6,420,784

Production must be considered in relation to the intensity of effort. It is very significant that in 1929, a total of 8,979 men and 4,546 boats took nearly 73 million pounds of fish, while in fiscal year 1950-51 it required 14,918 men and 8,584 boats to catch 69 million pounds. (See tables 1 and 2)

Recovery of production in Western Australia (2 million pounds higher than 1949-50 but still lower than 1948-49) and a rise of approximately 2½ million pounds in Tasmania are encouraging. In States where fisheries are more fully developed, however, it seems that existing fisheries are not likely to give higher production in the future. Increased production can only be achieved by the development of new fisheries.

Inadequacy of production in meeting demand for fish has resulted in increasing imports. During 1950-51, Australia imported 42 million pounds of fish (product weight). It is estimated that this is equivalent to nearly 76 million pounds fresh whole weight. On the fresh whole basis, Australia imported 40 million pounds of canned fish, 15 million pounds of cured fish, and 21 million pounds of fresh or frozen fish.

Exports were less than 2 million pounds (fresh whole weight). Consequently, on the basis of the fresh whole weight of the fish, Australia produced less than half the quantity consumed during the year.

AUSTRALIAN SPINY LOBSTER FISHING BOAT TAKING ON POTS AT SOUTH FREMANTLE.

In the production of crayfish, Western Australia produces more than half the toal and in that State a substantial improvement over 1949-50 figures has been made. Declines in Tasmania, South Australia, and New South Wales, however, offset the increase in Western Australia.

The outlook for prawn (shrimp), however, is satisfactory, as indicated by increases in New South Wales, Queensland, and Western Australia, the only States which fish them.

Oyster production is being retarded by labor difficulties.

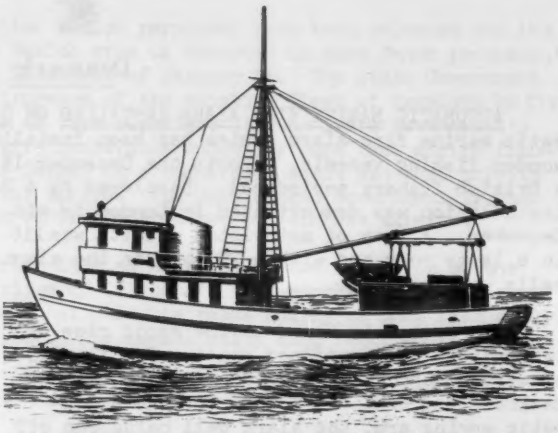
The general state of production in the inshore and demersal fisheries emphasizes the importance of developing tuna and other pelagic fisheries.

NOTE: VALUES CONVERTED TO U.S. DOLLARS ON BASIS OF ONE AUSTRALIAN £ = US$2.28.

Colombia

THREE TUNA VESSELS FOR SEMIOFFICIAL FISHING COMPANY: The first of three fishing vessels being built by a Swedish shipbuilding yard ran its trials on January 9, according to the January 10 issue of the Göteborgs Handels & Sjöfartstidning quoted by an American consular dispatch from Göteborg.

In addition to the three vessels, an entire fish plant is going to be shipped to Colombia. It consists of a canning factory with a capacity of 10 metric tons of fish daily, refrigerated rooms for about 350 tons of fish, a deep-freezer plant with a capacity of 5 to 7 tons per day, a fish-oil and fish-meal factory for up to 1,000 sharks per day, transport apparatus for the factory, etc. The cost of the plant and vessels will be about $850,000, with the vessels costing about US$170,000 each.



TYPE OF TUNA VESSEL BUILT BY SWEDISH SHIPYARD FOR SEMIOFFICIAL FISHING COMPANY IN COLOMBIA.

The completed vessel (The Albacora) of 160 gross metric tons, is built of pine on a frame of oak. The deckhouse and the machinery are placed in the forepart of the ship. Main dimensions are: length overall about 83 feet, length between perpendiculars about 70 feet, beam 25 feet, height at the side 11.6 feet, maximum draft 11.3 feet.

The main engine is a two-cylinder, 2-phase semi-Diesel engine with air-pressure starter and electric ignition. At 300 revolutions per minute, it develops 170 h.p. and operates a two-blade bronze propeller with turnable blades. The auxiliary engine consists of a two-cylinder, two-phase engine of 32 h.p. It also operates the freezing compressor, a 10 kw. generator, and a fire pump. In the engine room there is also a powerful pump which circulates the water in the big tank on deck which will contain live bait for tuna fishing.

The hold is insulated and is provided with a freezing plant of the freon type for freezing the fish. A comparatively large quantity of ice will also be carried on each trip for rapid cooling of the catch.

The principal catches will consist of tuna caught on hooks and short fishing rods by fishermen on platforms on the outside of the vessel. The frames of the platforms consist of perforated rubber tubes to provide water under pressure to be used in bait fishing for tuna along the same lines as the Japanese, basically to save bait.

The vessel is also equipped for fishing with different types of seines and nets, and also for trawling.

The Albacora was scheduled to leave in about mid-January 1952 for Buenaventura, Columbia, under the command of a Swedish captain and six Swedish assistants. Delivery of the two remaining vessels, the Alcatras and the Delphin is scheduled for February and March. As soon as the first vessel has been turned over to the owners

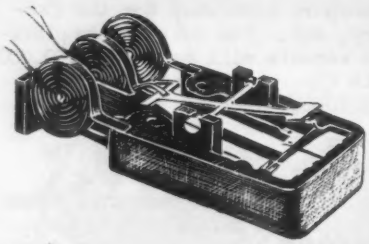
in Colombia, the crew will fly back to take over the third vessel, while the second one will have another crew. The journey to the Pacific coast of Colombia is estimated to take around eight weeks.

Normally, the Albacora will have a crew of 12 during fishing trips of at least 14 days, including the journey to the Galapagos and back.

Denmark

AUTOMATIC MARINE FIRE ALARM INSTALLED ON DANISH FISHING VESSELS: A new automatic marine fire-alarm system has been installed on a number of small Danish wooden fishing vessels, reports the December 15, 1951, issue of The Fishing News, a British fishery periodical. Developed by a Danish firm, the efficiency of this installation was demonstrated in London in mid-December. A tray of methylated spirits was lit in a large room and within 20 seconds the alarm bells were ringing.

The system is based on the rapid rise of temperature in a confined space. Small coils of wire expand in an attachment fitted to the deckhead and contact is made through a magnetic spring arm, the alarm bell being run off an ordinary accumulator.



MARINE FIRE ALARM. MECHANISM OF THE TRANSMITTER.

In the Danish M.F.V.-type fishing vessels already fitted with this system, four transmitters are installed--one in the wheelhouse, one in the engine room, one in the crew's quarters, and one in the pantry. Alarm bells are fixed fore and aft.

Danish insurance companies are allowing a 4-percent discount on the first premimum for vessels fitted in this way.

India

WEST BENGAL TO INCREASE FISH SUPPLY WITH U. S. AID: The Central Government of India has announced that, with United States aid, West Bengal would acquire five new fishing trawlers and a cold storage plant. It is hoped that this will aid in increasing Calcutta's fish supply, points out a February 11 dispatch from that city.

* * * * *

REPORT ON DEEP-SEA FISHING IN BENGAL WATERS IN 1951: In December 1950 the West Bengal Government undertook a deep-sea fishing project in the Bay of Bengal with the help of Danish personnel, states a January 24 American consular dispatch from Calcutta.

Up to the end of December 1951, the two Danish trawlers bought by the State Government made 19 trips, in the course of which investigations were carried out

in 11 fishing grounds and a total of 299.7 long tons of fish were caught. Of the total catch, 12 percent was first-quality fish, 85 percent edible varieties of so-called second quality, and 5 percent sharks, rays, swordfish, and the like. The total price obtained by sale of the catches was Rs.126,067 (about US$26,474). The total capital outlay for the project until the end of December 1951 was Rs.1,172,923, (about US$246,314) and the recurring expenditure incurred until that date Rs.205,098 (about US$43,070).

The Danish expert and three other Danish personnel have been released and the training of Indians to replace the Danish crew is reported to have "made progress," according to a press report in The Statesman of January 21. The State Government is reported to be considering the increase of the existing fleet of trawlers by five in order to maintain a regular flow of fish supplies. In the State Government's opinion, the data so far obtained give reasonable cause for hope that marine fishing can be undertaken in the Bay of Bengal on a commercial scale and that private enterprise would be attracted to that sphere. The West Bengal Government is also considering the training of Indians under the guidance of Japanese experts.

The fish supplies obtained during 1951 as a result of the operation of the Danish trawlers touched only the fringe of Calcutta's fish-supply problem. According to press reports it would appear that Calcutta needs nearly as much fish daily as the trawlers caught in a whole year. The normal daily fish requirements of Calcutta alone are estimated at about 576,100 pounds.

NOTE: VALUES CONVERTED TO U.S. DOLLARS ON BASIS OF ONE INDIAN RUPEE = 21 U.S. CENTS.

Japan

JAPANESE WILL NOT FISH FOR CRABS IN BERING SEA THIS SEASON: The Japanese do not intend to take part in crab fishing in the Bering Sea this season, according to a declaration to that effect by the Minister of Agriculture and Forestry and the Director of the Fisheries Agency. A Department of State report from Tokyo states an official release to that effect has been issued in Japan and has appeared in the Japanese press.

The Minister of Agriculture and Forestry remarked that fishing for crabs in the Bering Sea before the fisheries treaty was ratified was detrimental to Japanese interests and would antagonize American fisheries interests.

* * * * *

MAJOR PROBLEMS CONFRONTING INLAND SEA FISHERMEN: The fishing population in 11 prefectures bordering on the Japanese Inland Sea was estimated by a Government official at 260,000, states a January 31 American consular dispatch from Kobe.

Generally, the officials consider that there is an over-abundance of Japanese labor involved in fishing and that this has contributed to some extent to the relatively poor standard of living.

Since the decontrol of the price of fish in April of 1950, the prices of some of the better fish have almost doubled while, on the other hand, many of the common fish, such as sardines, have declined from 30-50 percent in price. In consideration of the rising costs of materials fishermen require, particularly manila rope and fuel oil, the margin of profit for the fisherman has not been improved. The independent nature of the men whose livelihood is fishing was given as one of the most significant reasons why any program attempting to form cooperatives is generally unsuccessful.

Some of the major problems confronting the fishing industry in the region can be listed as: (1) Lack of balance between the fishing population and the fish resources; (2) Raising the standard of living for fishermen and lowering their operation costs; (3) Assisting those in the fishing industry to accumulate sufficient capital in order that they can replace their equipment on a rational basis; (4) Encouraging a cooperative movement in order that the local fishing industry can attain greater economy; (5) Assisting fishermen to provide a higher education for their children in order that they may eventually seek employment in other fields and thus eliminate the excess fishing population; (6) Stabilizing the price of fish at a competitive level and expanding refrigerating and fish processing facilities; (7) Attempting to provide better ports and harbors to protect fishing boats during the typhoon season; and (8) Attempting to lower interest rates on loans made to fishermen.

Reports indicate that the quantity of fish caught in the Kobe area of Japan has been steadily increasing and compares favorably with prewar statistics.

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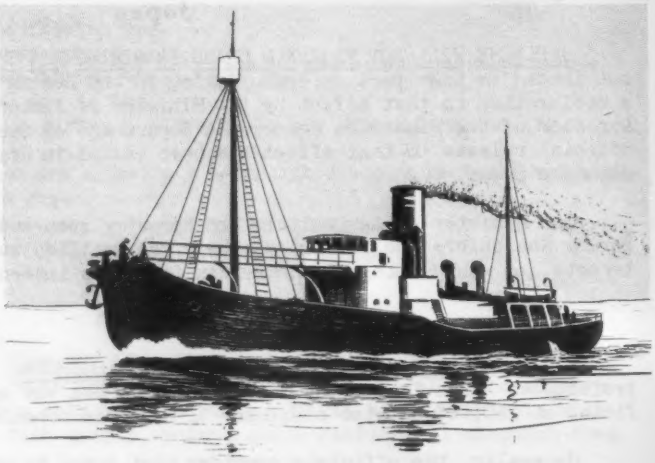
ANTARCTIC WHALING EXPEDITIONS: The Japanese Antarctic whaling expedition for the 1951-52 season consists of three fleets, reports the October 31 issue of SCAP's Natural Resources Section Weekly Summary.

Two will engage in baleen whaling (blue fin and humpback) and the third in sperm whaling. The first fleet to depart was headed by the Baikal Maru, a 6,000 gross-metric-ton factoryship, and consisted of five catchers and one tanker. This fleet departed Osaka on October 15, 1951. While the International Whaling Convention limits the season and the catch of baleen whales, no such restrictions are placed on sperm whales and the Japanese Government decided to dispatch this small fleet for the catching of sperm whales. Estimates indicate that 500 sperm whales may be taken in approximately 75 days of operation.



JAPANESE WHALE CATCHER.

The next to depart was the Nisshin Maru, a newly-constructed factoryship of 17,000 gross tons, accompanied by 11 catchers, two whale-towing boats, a 10,000 gross-ton tanker, two refrigerated whale-meat carriers of the 10,000 gross-ton class, one of 3,000 gross tons, and four of 1,000 gross tons. This fleet departed Yokosuka on October 25. The fleet engaged in sperm whaling from November 19, 1951, to January 1, 1952. On January 2, the baleen whaling season was officially opened and the fleet then engaged in baleen whaling. Estimates indicate that the following catch and products will be obtained: 200 sperm whales from which 1,900 tons of sperm whale oil and 1,200 tons of meat and other products will be produced; 200 blue whales and 1,000 fin whales, comprising 900 blue-whale units,1/ from which it is estimated 18,000 metric tons of whale oil and 19,400

1/ONE BLUE-WHALE UNIT EQUALS 1 BLUE WHALE, 2 FIN WHALES, OR 2-1/2 HUMPBACK WHALES.

tons of frozen and salted meat, blubber, and other food products will be obtained. Present plans are that operations will be completed by March 12, and the fleet will return to Japan by April 7, 1952.

The last fleet left Japan from Osaka on October 31, 1951. This fleet is headed by the mothership Tonan Maru of 19,000 gross tons which was salvaged after having been sunk at Truk Island in 1943. The ship was salvaged in 1950 and recommissioned on October 18, 1951. This fleet was comprised of the mothership, 11 catchers, two whale-towing boats, one scout boat, one 10,000 gross-ton whale tanker, one 10,000 gross-ton refrigerated carrier, one of the 3,000 gross-ton class, and two of 1,000 tons. Estimates indicate that the following catch and production will be obtained: 230 sperm whales producing an estimated 2,185 metric tons of sperm whale oil and other products; 350 blue whales and 1,000 fin whales, comprising 850 blue whale units, producing 17,000 metric tons of whale oil, 7,700 metric tons of frozen meat, and 4,420 metric tons of salted products. Like the second, this fleet engaged in sperm whaling prior to the opening of baleen whaling on January 2, 1952, and expected to complete operations and return to Japan at approximately the same time.

These three fleets of the 1951-52 expedition represent the sixth Antarctic whaling expedition dispatched from Japan (see table 1). The first expedition was

Table 1 - Composition of Japanese Antarctic Whaling Expeditions, 1946-47 to 1951-52

Type of Vessel	SEASONS											
	1951-52		1950-51		1949-50		1948-49		1947-48		1946-47	
	No.	Gross Tonnage (Metric Tons)	No.	Gross Tonnage (Metric Tons)	No.	Gross Tonnage (Metric Tons)	No.	Gross Tonnage (Metric Tons)	No.	Gross Tonnage (Metric Tons)	No.	Gross Tonnage (Metric Tons)
Factory	3	40,000	2	20,000	2	20,000	2	20,000	2	20,000	2	20,000
Cargo	11	28,500	12	28,000	12	28,000	10	25,000	11	22,000	6	21,000
Catcher	26	1,500	16	1,150	14	700	12	700	12	700	12	700
Tanker	3	25,000	2	20,000	2	20,000	2	17,000	2	17,000	1	7,000
Scouting Boat	3	900	2	700	2	700	2	700	-	-	-	-
Towing Boat	3	700	-	-	-	-	-	-	-	-	-	-
Total	49	96,600	34	69,850	32	69,400	28	63,400	27	59,700	21	48,700

authorized by the Supreme Commander for the Allied Powers in 1946 to assist in alleviating the critical shortage of fats and oil in Japan. It was estimated that the expedition could provide 50 percent of all of the Japanese requirements for oil and fats for industrial and edible purposes. The authorization was in keeping with the scope of the Atlantic Charter and the Potsdam Declaration in that the Japanese were permitted access to a world resource on an equal basis with other powers and maximum utilization was made of equipment and personnel existing in Japan. In ensuing years the shortage of fats and oil in Japan remained critical and expeditions were authorized annually.

Table 2 - Whale Catches by Japanese Antarctic Whaling Expeditions, 1946-47 to 1950-51

Species of Whale	SEASONS					Total for 5 Seasons
	1950-51	1949-50	1948-49	1947-48	1946-47	
	No.	No.	No.	No.	No.	No.
Sperm	409	172	-	2	4	587
Blue	271	818	631	710	693	3,123
Fin	2,052	1,056	1,014	608	478	5,208
Humpback	9	67	-	-	-	76
Total	2,741	2,113	1,645	1,320	1,175	8,994
	Units	Units	Units	Units	Units	Units
Blue-whale units 1/	1,200.6	1,372.8	1,138.0	1,014.0	931.0	5,656.4

1/ ONE BLUE-WHALE UNIT EQUALS ONE BLUE, TWO FIN, OR 2.5 HUMPBACK WHALES. SPERM WHALES ARE NOT CONVERTED TO BLUE-WHALE UNITS.

The five expeditions produced 102,520 metric tons of whale oil and 148,332 metric tons of meat and other products. (Table 3) The value of the whale oil is estimated at US$40,000,000 and that of the meat and other products at US$40,000,000. This estimate is based on the value of food that would have been imported in place

of the whale meat and other products supplied by these expeditions. Thus the products of the five expeditions are valued at about US$80,000,000. Deducting $5,000,000 as the approximate cost of fuel oil and other material supplied from United States funds, the products of the expeditions represented a direct saving to the United States taxpayer of not less than $75,000,000.

The improvement in utilization of the whale carcass by the Japanese expeditions is outstanding. Prior to World War II, the average production per blue-whale unit

Table 3 - Whale Products Produced by Japanese Antarctic Whaling Expeditions, 1946-47 to 1950-51

Product	S E A S O N S					Total for 5 Seasons
	1950-51	1949-50	1948-49	1947-48	1946-47	
	(metric tons)					
Sperm oil	3,815	1,647	-	-	-	5,462
Whale oil	25,060	27,010	20,350	17,840	12,260	102,520
Meat[1/]	29,639	39,124	29,863	27,479	22,227	148,332
Total	58,514	67,781	50,213	45,319	34,487	256,314

1/ TERM "WHALE MEAT" INCLUDES OTHER PRODUCTS SUCH AS VENTRAL GROOVES, CARTILAGE, INTERNAL ORGANS, FLUKES, AND LIVER OIL.

for Japanese fleets was 16 metric tons. The 1950-51 expedition raised the average production to 42 metric tons. Whaling fleets of other nations produce approximately 25 metric tons per blue-whale unit.

Prior to World War II, Japan had the unenviable reputation of showing disregard for the conservation methods established by the International Convention for the Regulation of Whaling in which all the major whaling nations except Japan participated. Since the first season in 1946-47, Japan has adhered meticulously to the regulations and now has the highest record in the world for complete utilization of the whale carcass and for the least number of violations of the Convention.

JAPANESE GOVERNMENT

Mexico

RESTRICTION OF AMERICAN FISHING ACTIVITIES OFF LOWER CALIFORNIA URGED BY MEXICANS: The Mexican Government is being urged to "take steps to prohibit the capture of sardines in the most characterized phase of spawning in Mexican national waters and particularly in those which surround Cedros Island, Benitos Island, and San Juan Vizcaino Bay." Former President General Abelardo L. Rodriguez, owner of a fishing company in Baja California, wrote two statements which appeared in El Heraldo de Baja California (Tijuana) on January 29 and 30, 1952. He further states that otherwise the imminent risk is run of having sardines "disappear as has occurred along the American Pacific Coast." These statements publicize the fear held by the Mexican fishing industry of American fishing operations in the waters off Lower California.

Briefly, the statements cite studies prepared in the United States tending to show that the most important sardine spawning fields on the Pacific Coast lie off central Baja California, precisely within the area covered by the operations of the company owned by General Rodriguez. Having established this point, he goes on to say that American tuna fishing vessels constantly obtain their bait in these spawning grounds both in and out of the spawning season and, as a result, sardines are disappearing with a consequent serious threat not only to his company but also to the over-all fisheries wealth of Mexico. He further urges the Mexican Government to take appropriate steps to safeguard this wealth even at the expense of foregoing the important revenues obtained in San Diego and San Pedro, California, from the sale of fishing permits to American vessels.

The Mexican Ministry of Marine is being urged to give some protection to the diminishing supply of Lower California sardines. During the past three months the Mexican Navy Department has purchased several small vessels from the United States Navy. Occasionally news items have appeared in the Tijuana and Ensenada newspapers indicating that these newly-acquired vessels are to be used to patrol the coast of Lower California where it is contended American fishing vessels constantly carry on fishing operations without appropriate Mexican permits, according to a February 4 American consular dispatch from Tijuana.

In Tijuana the newspapers have readily agreed with General Rodriguez and in editorials have urged further protection of the Mexican fishing industry which he advocates.

It would appear that restrictions against the operation of American fishing vessels in Mexican waters off the coast of Lower California may soon be expected, according to reports.

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TEMPORARY CLOSED SEASON FOR PACIFIC COAST SHRIMP: A 30-day temporary closed season on shrimp fishing in the Pacific from San Blas, Nayarit, northwards along the coasts of Sinaloa, Sonora, and Baja California in the Gulf of California was announced in the February 7 issue of Mexico's Diario Oficial. The closed season entered into effect 30 days from the date the order was published (March 8, 1952), states a February 7 American consular dispatch from Mexico City.

The Mexican Navy Department announced that this closed season on shrimp fishing in Mexico's north Pacific coastal waters was in effect until April 8 by order of the President. The closure was effective in all Mexican territorial waters from San Blas, Nayarit, north to the United States border and includes both coasts of Baja California.

Norway

NORTH NORWAY'S FISHING INDUSTRY DEVELOPMENT PLANNED: Subject to Parliamentary approval, the Norwegian Ministry of Fisheries has proposed various ways and means of improving the fishing industry in the three northern provinces, as part of the 10-year plan for economic development of North Norway, states the Norwegian Information Service in a January 31 news release. Major attention would be given to expansion of the fishing fleet and processing plants. Plans call for acquisition of many more ocean-going fishing craft, and also several 280-foot draggers for use along the coast of Finnmark Province.

High on the agenda, too, is improvement of fresh-water supplies and construction of much-needed fishermen's cabins in the main ports of the Lofoten and Finnmark fisheries. The Ministry further has proposed construction of a small ocean-research vessel, equipped with echo depth-sounder and sonar instruments, to track down the whereabouts of the herring, so that the research vessel G. O. Sars can devote its attention exclusively to investigating the migrations and habits of cod.

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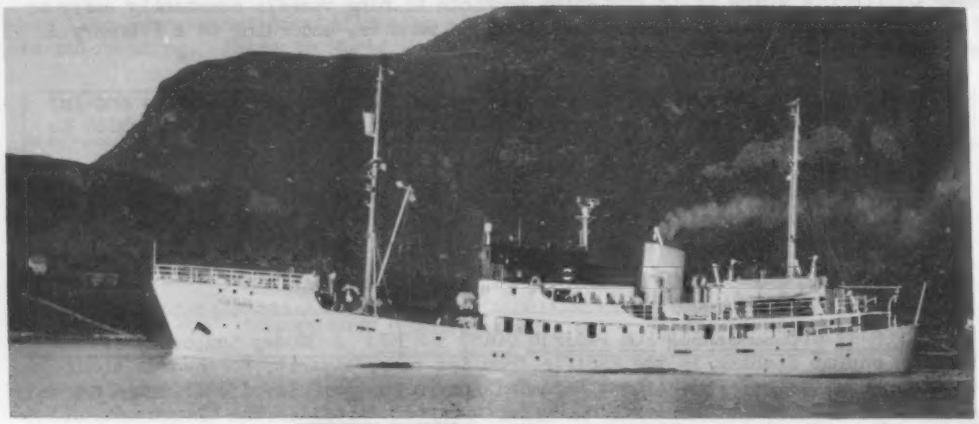
WINTER HERRING SEASON STARTS: The 1952 winter herring fisheries, off the coast of Sunnmore Province in Western Norway, got off to a stormy, but very promising

start on January 18, states the Norwegian Information Service in a January 31 news release.

Following radio-telephone directions from the Norwegian ocean-research vessel G. O. Sars, an unprecedented number of fishing craft, including many purse seiners



NORWEGIAN RESEARCH VESSEL G. O. SARS.

and drifters, ventured 45 nautical miles out to sea where they found waters teeming with sloe herring. Notwithstanding strong gales that caused heavy loss of valuable gear, in one day more than 37,000 metric tons of herring--worth about 7 million kroner to the fishermen (US$980,000)--had been landed in Aalesund, main port of the western fisheries. That's a new record for one day.

Kept constantly posted by radio-telephone reports from G.O. Sars, more than 1,000 fishing craft followed the herring toward the shore, fighting storms all the way. The total catch was estimated at over 116,000 tons--twice as much as at the same time last year--with a first-hand value of about 23 million kroner (US$3,216,780). Analysis shows that this year's herring has a fat content of 14.5 percent, or 1 percent higher than in 1950. Average weight is 11.75 ounces, which is notably more than last year.

In the past 12 months, the Norwegian herring meal and oil industry has made great strides in eliminating some of the bottlenecks which have troubled production in the past. To save valuable time, four large specialty transports, equipped with up-to-date loading and unloading facilities, ply back and forth between fishing grounds and the reduction plants in and around Aalesund. Two of the vessels are equipped with herring grabs, each capable of loading 4,000 metric tons a day. The other two feature huge suction pumps of American design, each with a capacity of 100 tons an hour. Total capacity of the four transports is thus about 10,000 tons a day.

As many fishing craft still bring their catch directly to the wharves of the reduction plants, a number of these have recently installed herring grabs and elevators to speed up unloading. The productive capacity of the meal and oil plants has at the same time been increased by about 20 percent in an effort to keep abreast of deliveries.

Accounting for 1,168,000 metric tons of the 1951 Norwegian landings, the herring fisheries alone produced 100,000 tons more than the total for all fisheries in 1949. The winter herring fisheries landed a record high of 880,000 tons, beating the previous high in 1948 by well over 68,000 tons.

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EXPORTS OF FISHERY PRODUCTS AND BYPRODUCTS, 1951: Norwegian fish exports (headed by stockfish, canned fish, fish oils, herring meal, and cod liver oil) reached a gross value of 961 million kroner (US$134,405,590) in 1951, higher than ever before, states the Norwegian Information Service in a January 31 news release.

The United States held its position as the largest buyer of Norwegian canned fish, mainly brisling sardines.

Exports of quick-frozen fish to the United States increased substantially to a gross value of 10 million kroner (US$1,398,600) as compared with 4 million kroner (US$559,440) in 1950.

Nearly 60 percent of the total stockfish production was exported to Brazil in exchange for coffee. Other large stockfish buyers were Portugal, Cuba, and Spain.

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NEW WHALING AID INVENTED: Norwegian engineers have developed a compact electronic instrument, named RADIM, which automatically calculates the distance between two radio stations as far as 300 nautical miles apart, states a February 14 news release from the Norwegian Information Service. Specially designed for the Norwegian whaling industry, RADIM may help to speed up whaling operations by determining the distance from the floating whale factory to a catcher boat which reports, by shortwave, the killing of a whale. A tugboat can thus be dispatched directly to the spot where the whale has been killed, relieving the catcher boat of the job of hauling the booty back to the floating factory.

Developed on the initative of Anders Jahre & Co., the first RADIM set is now being tested aboard the Kosmos IV, one of the largest Norwegian floating whale factories. On the basis of experience during the current pelagic whaling season, RADIM will be perfected and put into production.

Compact in size, RADIM works in conjunction with any ordinary marine shortwave set. It is operated simply by pushing a button. By recording the time lapse of a signal from one radio station to another, RADIM makes it possible to calculate the distance with an accuracy of one nautical mile.

Netherlands

WHALING INDUSTRY, 1950-51: Production and Prices: The only whaling company in the Netherlands reports that the total production from the 1950-51 catch was 15,287 long tons of whale oil, 2,066 tons of sperm oil, and 7 tons of vitamin oil, according to a December 6 American consular despatch from Amsterdam. The Netherlands Government had contracted in advance to purchase the entire whale oil output at fl.1,223.50 (about US$318) per long ton. Most of the sperm oil was sold to Germany, probably for use in the cosmetic industry. The average price obtained was fl. 900 (about US$234) per ton. The vitamin oil was sold to a domestic dealer.

The entire fleet set out for the Antarctic, and the hunt for sperm whales began on December 1, 1950. The actual whaling season opened on December 22 and closed

on March 9, 1951, in accordance with the International Convention for the Regulation of Whaling. Although activities had to be suspended on several occasions because of unfavorable weather conditions, the catch of the Netherlands whaling fleet

Netherlands' Whale Oil and Sperm Oil Production, 1946-51

Season	Whale Oil	Price of Whale Oil		Sperm Oil	Value	
	Long Tons	US$ Per Long Ton	Guilders Per Long Ton	Long Tons	US$	Guilders
1950-51	15,287	318	1,223	2,066	5,353,317	20,589,680
1949-50	13,030	241	925	843	3,242,008	12,469,260
1948-49	17,679	264	1,015	702	4,792,621	18,433,159
1947-48	13,033	372	990	1,176	5,459,936	14,521,106
1946-47	12,221	376	1,000	173	4,643,067	12,348,583

during the 1950-51 season was considered satisfactory. The expedition caught 303 blue whales, 829 fin whales, 262 humpback whales (equalling 822 whale units), 236 sperm whales, and one sei whale.

Under the eight-year agreement with the Netherlands Government, the company will sell its entire output of whale oil to the Government at the prevailing world market price. The Government, moreover, has guaranteed minimum proceeds sufficient to cover operating costs, amortization, and a yearly dividend. If, in the case of a very disappointing catch, the Company should be forced to have recourse to the Government's guarantee, the dividend will be reduced according to specific scale.

Fleet: The third remodeled Japanese whaler and the two converted British corvettes took part in the 1950-51 expedition. Since the catches of the two converted corvettes had been very satisfactory, the company purchased two more British corvettes which were also converted to whalers. One was ready in time to join the 1951-52 expedition.

Expansion of Fleet: The Willem Barendsz, one of the smallest factory whalers operating in the Antarctic, has a relatively small production capacity compared to motherships operated by other whaling companies. The tendency of the International Convention for the Regulation of Whaling to shorten the whaling season convinced the Netherlands Whaling company to consider expansion of the production apparatus.

The original fleet of whale catchers, consisting of old vessels, has already been partly renewed and expanded. Additional expansion of the fleet is necessary but it would not be justified if new whalers were to serve an antiquated factory-ship. For some time, therefore, the Netherlands whaling company has been considering the replacement of the Willem Barendsz by a new large factory whaler. An arrangement has recently been reached with the Netherlands Government making it possible for this company to place an order for a new factory whaler. This ship, with a loading capacity of 26,500 metric tons and a displacement of 44,000 tons, has been ordered, and it is anticipated that the new whaler will be completed in time to join the 1955-56 expedition.

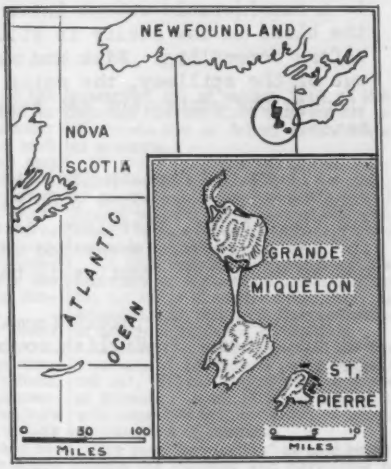
An article in a leading Amsterdam financial newspaper discussed the plans announced by the Netherlands whaling company in detail and asserted that in spite of the seemingly favorable agreement reached between the Netherlands whaling company and the Government, prospects for the future are rather uncertain. The article states that the projected size of the new factory whaler leaves no doubt of the possibility of a future annual production of over 20,000 tons of whale oil. It points out, however, that the questions which have arisen are (1) whether future catches will not be reduced as a result of the increased number of participants in whaling expeditions and, (2) whether the figure of 16,000 blue-whale units, the maximum catch permitted

under the International Convention for the Regulation of Whaling, will not be lowered in order to provide for the proper conservation of whale stocks.

Outlook for 1951-52 Season: On September 27, 1951, the Willem Barendsz left Amsterdam on its sixth expedition. The contract with the Netherlands Government for the oil price for 1951-52 has yet to be concluded. The present price for whale oil on the world market leads the company to expect that this year's price will be higher than last year's.

St. Pierre-Miquelon

DEVELOPMENT OF FISHERIES FACILITIES PLANNED FOR ST. PIERRE: The main aspect of a new industrial program for St. Pierre is the opening of a new fresh fish plant, which is expected to go into production during the spring of 1952. The American Consulate at Halifax reports that these plans were revealed in the December 31, 1951, issue of St. John's (Newfoundland) Daily News. The new plant will be situated in the old cold-storage plant built in 1918 at a cost of a million dollars. The businessmen of St. Pierre, like their friends on the south coast of Newfoundland, know that their future in the fishing industry lies in modern fresh fishing methods. During the past year the old cold-storage building has been completely renovated and reorganized for fresh-fish production. When in operation, the plant expects to be able to process all the fish produced on the islands and also that of several trawlers and draggers operating from St. Pierre.



In recent years, the curing of salt fish at St. Pierre has been improved with the introduction of fish dryers. There are five such dryers now in operation on the island. Although with the new fish plant in operation most of the fish will be processed fresh, it is felt that there will be salt fish landed at St. Pierre for many years to come. At present the total catch of the shore fishermen is caught, cured, and marketed on a cooperative basis under government assistance and supervision.

During the spring of 1952 St. Pierre will venture into the seal fishery. The M/S Miquelon owned and operated by the Government, and engaged in the passenger-freight service with the mainland and the islands, will be equipped for the seal fishery. The ship is being sheathed with greenheart for the hunt and will be commanded by a Newfoundland sealing captain. A mixed French and Newfoundland crew will be used so that the islanders may learn the business of seal hunting.

NOTE: ALSO SEE COMMERCIAL FISHERIES REVIEW, JANUARY 1950, P. 53.

United Kingdom

FISH-WASHING DEVICE FOR TRAWLERS: A fish-washing device which is proving remarkably successful for use aboard trawlers has been invented by W. H. Wood, a Hull tralwer skipper, states the December 8 issue of The Fishing News, a British fishery

periodical. The new device has already been fitted on almost half of the British distant-water trawlers. Reports indicate that properly used the device is of real service in bulk fishing.

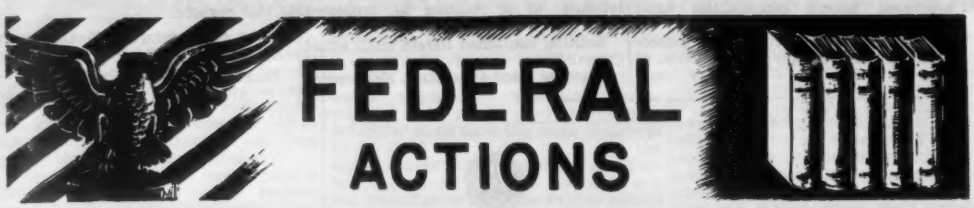
The machine consists of a galvanized metal trough with removable end pieces. This travels on "tram lines" which are welded to the deck stanchions. The transverse members on which the trough rests can be moved up and down along these lines so as to suit whichever of the three hatches is being used. It can be tilted either way so as to spill the fish either forward or aft.

FISH-WASHING DEVICE FOR TRAWLERS.

Water is blown into the trough through two jets set at an angle, so that there is always 15 inches or so of fresh sea water in violent commotion. The fish, as they are gutted, are tossed into the trough and are thus washed completely externally and to a considerable extent internally while the blood in the cavity is still fresh and before congealing. Fish and water tumble out of the spillway, the water falling through the gantry and not reaching the hatch.

There are certain limitations—fish need to be sorted before they reach the holds, and the machine, therefore, is most suitable for use on grounds where cod only are being caught. Where there are haddock or small cod as well, the practice is to deal with them separately.

The necessary patent formalities have been complied with in all the main fishing countries. An English company is acting as the sole concessionaire for the machine.



Department of Agriculture

REVISION OF DELEGATION OF AUTHORITY WITH RESPECT TO FISHERY PRODUCTS PRODUCTION UNDER DEFENSE PRODUCTION ACT: Revision 1 to Defense Food Delegation No. 2 issued by the Department of Agriculture on March 17 adds to the defense fishery authority delegated to the Department of the Interior the function of recommending to the Defense Production Administrator the issuance of certificates of necessity under Section 124 A of the Internal Revenue Code with respect to the production of fishery commodities. Under the original Defense Food Delegation No. 2 issued October 13, 1950, certain authority under the Defense Production Act relating to the production of fishery commodities and products was delegated by the Secretary of Agriculture to the Secretary of the Interior.

The full text of Revision 1 to Defense Food Delegation No. 2 follows:

DELEGATION OF AUTHORITY WITH RESPECT TO FISHERY COMMODITIES OR PRODUCTS

Defense Food Delegation No. 2 (16 F. R. 3311, 3519)[1] is hereby revised to read as follows:

The Department of the Interior has certain responsibilities and exercises certain functions with respect to the production of the Nation's supply of fishery commodities. It is highly desirable in order to insure the necessary production that the exercise of all functions with respect to the production of fish be closely coordinated. To effectuate this purpose and to utilize to the fullest extent possible the technical knowledge and experience of the fishery staff of the Department of the Interior, it is the purpose of the Secretary of Agriculture to delegate to the Secretary of the Interior certain defense functions delegated to the Secretary of Agriculture.

Therefore, pursuant to the provisions of section 902 (b) of Executive Order 10161 (15 F. R. 6105), as amended, the Secretary of Agriculture hereby delegates, subject to the terms and conditions set forth herein, to the Secretary of the Interior the following functions vested in the Secretary of Agriculture by Executive Order 10161, Executive Order 10200, Executive Order 10281, and Defense Production Administration Delegation No. 1, as amended (15 F. R. 6105, 16 F. R. 61, 16 F. R. 8789, and 16 F. R. 11245):

(1) The priority and allocation functions set forth in sections 101 (b) and 102 of Executive Order 10161, as amended, with respect to the production of fishery commodities or products.

(2) The claimant functions under section 103 (a) of Executive Order 10161, as amended, with respect to all materials and additional facilities requisite to the production of fishery commodities or products, but excluding tin container supply and materials and facilities used in common for processing of fish and other foods: *Provided*, That the Secretary of the Interior, prior to the exercise of this claimant function, shall, to assure full coordination, notify the Secretary of Agriculture of his intent to do so, and shall provide with such notice complete and detailed information as to the materials and additional facilities concerned.

(3) Requisitioning functions under section 201 (a) of Executive Order 10161, as amended, with respect to the production of fishery commodities or products, except that with respect to the processing of fish the Secretary of Agriculture reserves the right to prohibit or modify the exercise of this function in any instance where, in his opinion, such action would interfere with or have an adverse effect upon the processing of other foods: *Provided*, That the Secretary of the Interior, prior to the exercise of the requisitioning function, shall notify the Secretary of Agriculture of his intent to do so. The Secretary of Agriculture will consult with the Secretary of the Interior in order to assure full coordination before exercising the requisitioning function with respect to food processing when he determines that such action may interfere with the processing of fish.

(4) The function of certifying under sections 310 (b) and 311 (b) of Executive Order 10161, as amended, with respect to loans required for the production of fishery commodities or products.

(5) The function of recommending to the Defense Production Administrator for the issuance of certificates under subsection (e) of section 124A of the Internal Revenue Code with respect to the production of fishery commodities or products.

(6) Such functions relating to labor supply as are delegated to the Secretary of Agriculture under section 601 (b) of Executive Order 10161, as amended, with respect to the production of fishery commodities or products.

(7) The functions delegated to the Secretary of Agriculture under section 701 (a) (1) of Executive Order 10161, as amended, with respect to the production of fishery commodities or products.

(8) The functions delegated to the Secretary of Agriculture under sections 902 (a), (b), (d) (1), (d) (2), and 904 of Executive Order 10161, as amended, with respect to the production of fishery commodities or products.

The term "production" as used herein means the catching and harvesting of any form of aquatic animal or plant life and the processing thereof.

The term "fishery commodities or products" as used herein means any edible or nonedible fish, any form of aquatic animal or plant life, or any other commodity or product, including fats and oils, of marine or fresh water origin, which is within the meaning of the term "food" as defined in section 901 (h) of Executive Order 10161, as amended.

The functions hereby delegated to the Secretary of the Interior shall be exercised with respect to the production of fishery commodities or products to fulfill the requirements for military, essential civilian, and foreign needs, as determined by the Secretary of Agriculture.

Nothing herein shall be construed to delegate to the Secretary of the Interior functions vested in the Secretary of Agriculture with respect to (1) the distribution in consumer channels of un-

[1] Originally published in 15 F. R. 6998.

processed fishery commodities after delivery to the initial purchaser; or (2) the distribution; procurement; inspection; container supply; specification of product, container, standards, and labeling; of or relating to, processed fishery commodities or products.

Nothing contained herein shall affect the validity of any action taken pursuant to Defense Food Delegation No. 2 prior to this revision.

Done at Washington, D. C., this 17th day of March 1952.

[SEAL] K. T. HUTCHINSON,
Acting Secretary of Agriculture.

NOTE: ALSO SEE COMMERCIAL FISHERIES REVIEW, NOVEMBER 1950, PP. 82-3.

Department of Commerce

NATIONAL PRODUCTION AUTHORITY

ADDITIONAL CANS FOR CANNING CLAM CHOWDER: Upon application by individual packers of clam chowder, their quota for the canning of this product will be increased from 90 to 100 percent of their base-period use of cans.

The National Production Authority in February informed the Defense Fisheries Administration of the Department of the Interior of this action. Canners of clam chowder under this action will be permitted the same increase that was recently allowed canners of non-seasonal soups. Canners of clam chowder wishing to receive an increase in their quota should file NPA forms NPAF-38 with the Chief, Metal Cans Section, Containers and Packaging Division, National Production Authority, Washington 25, D. C.

* * * * *

UNRESTRICTED USE OF CANS MADE OF SECONDARY TIN-MILL PRODUCTS ANNOUNCED: Canners and other packers are authorized by the National Production Authority by Amendment 1 to M-25 to use cans made of secondary tin-mill plate for the packaging of any commodity without regard to can quotas or can specifications. However, the amendment, issued and effective March 13, does not change quota limitations and specifications in the original can order.

NPA explained that 103,000 tons of secondary tin-mill plate will be allotted to can manufacturers for the remainder of the first quarter and for the second quarter of 1952. The amendment allows canners and packers to use any quantity of secondary tin-mill plate for the packing of any commodity without having the material charged against percentage quotas defined in the original order. Order M-25 previously required users of cans made from waste-waste, mill accumulation plate, and other types of plate (except waste and black-plate rejects) to charge such cans to their quota.

This amendment will be of particular interest to canners of fishery products falling within the "limited quota" categories of Order M-25.

The National Production Authority indicated that secondary tin-mill products are accumulating in mills because present outlets are inadequate. By making the allotments of these materials to can manufacturers, it will be possible to move the materials into useful channels, relieve storage problems, and avoid loss by rusting. The amendment requires that cans or parts of cans, or an equivalent quantity, made from any part of the secondary tin-mill plate allotted to a manufacturer must be offered to his packer or canner customers on a pro-rata basis. As defined in the amendment, secondary tin-mill plate includes mill-accumulation plate, tin plate, waste-waste, unmended menders, and unassorted temper tin plate.

This amendment to NPA Order M-25 is found necessary and appropriate to promote the national defense and is issued pursuant to the Defense Production Act of 1950, as amended. In the formulation of this amendment there has been consultation with industry representatives, including trade association representatives, and consideration has been given to their recommendations.

NPA Order M-25, as last amended January 22, 1952, is hereby further amended in the following respects:

1. Paragraph (e) of section 2 is amended to read as follows:

(e) "Tin plate" means steel sheets coated with tin, and includes electrolytic tin plate, hot-dipped tin plate, primes, seconds, unassorted, tin plate waste-waste, menders, unmended menders, and unassorted temper tin plate. Tin plate (except waste-waste) is furnished as "specification production plate" or "mill accumulation plate," and each such class includes primes, seconds, and unassorted. Specification production plate is plate produced against orders for specific end uses. Mill accumulation plate is plate arising in the production of specification production plate not applicable against such orders.

2. Section 9 is amended by the addition of a new paragraph, designated paragraph (e) and reading as follows:

(e) *Special allotments of can materials.* As used in this paragraph the terms "allotment," "controlled materials," and "authorized production schedule" shall have the same meanings as in CMP Regulation No. 1. If the allotment or any supplemental allotment of controlled materials made to a can manufacturer for the first or second calendar quarter of 1952 includes in express terms a specified weight of mill accumulation plate, tin plate waste-waste, unmended menders, unassorted temper tin plate, or "other coated secondaries" (as defined in NPA Order M-24, as amended), for use by him in fulfilling his authorized production schedule, then, to the extent that he orders and accepts delivery of any such secondary material and to the extent that he manufactures cans or parts of cans or both made entirely therefrom, he shall offer such cans and parts of cans so manufactured, or an equivalent quantity, among his customers on a pro rata basis. If, upon the first or any subsequent offering, any customer fails to order any cans or parts of cans representing his pro rata share, the cans and parts of cans so unordered shall also be offered by the can manufacturer among his remaining customers on a pro rata basis. Any packer purchasing such cans or parts of cans may use the same, or an equivalent quantity, during any calendar quarter or quarters of 1952 for packing any product irrespective of the quota percentage limitations and the can material specifications of this order. The can manufacturer shall deliver to each purchaser of any cans or parts of cans supplied under this paragraph a certificate reading substantially as follows:

Certified for use in accordance with section 9 (e) of NPA Order M-25.

This amendment shall take effect March 13, 1952.

(Sec. 704, 64 Stat. 816, Pub. Law 96, 82d Cong.; 50 U. S. C. App. Sup. 2154)

NATIONAL PRODUCTION AUTHORITY,

By JOHN B. OLVERSON,
Recording Secretary.

* * * * *

CONSTRUCTION REGULATIONS REVISED: A revised set of regulations covering the methods of obtaining materials for industrial and commercial construction were announced on March 6 by the National Production Authority.

The new basic construction regulation (Revised CMP Reg. 6, March 6, 1952) supersedes CMP Reg. 6, as amended August 3, 1951; Direction 1 to CMP Reg. 6 as amended August 22; and NPA Order M-4A, as amended August 20, 1951. The new regulation defines the various categories of construction, establishes dollar and weight limits for the self-certification procedures, and explains the rules limiting the right to commence or continue construction.

All members of the fishery and allied industries who contemplate any construction (other than housing) are urged to obtain a copy of the new regulation before they commence construction.

The Defense Fisheries Administration is charged with the responsibility for allotting controlled materials for all shore-side construction within the commercial fishing industries which exceeds the self-certification limits established in Revised CMP Reg. 6. Application for third quarter 1952 construction should have been submitted to the Defense Fisheries Administration on Form CMP-4C by March 15, 1952, or as shortly thereafter as possible.

In addition, Delegation 14, which delegates to other Government agencies the authority to administer the construction regulations on categories of construction within their respective jurisdictions, was amended to conform with the revised CMP Reg. 6; and housing construction has been separated and put under M-100.

For details see: Revised CMP Reg. 6 (Construction); M-4A Revocation and CMP Reg. 6 Dir. 1 Revocation; and Del. 14 As Amended (Delegation of Authority to Make Allotment and Assign Ratings Under Revised CMP Regulation No. 6 and to Process Applications Under NPA Order M-100); all dated Mar. 6, 1952. Also news release No. NPA-1963.

NOTE: FULL TEXTS OF MATERIALS ORDERS MAY BE OBTAINED FROM NATIONAL PRODUCTION AUTHORITY, WASHINGTON 25, D.C., OR FROM ANY DEPARTMENT OF COMMERCE REGIONAL OR FIELD OFFICE.

Defense Production Administration

LIST OF BASIC MATERIALS AND ALTERNATES—ISSUE NO. 5: "Extension of military production time schedules and an improvement in imports are helping to ease supplies of certain critical metals," the Director of the Conservation Division in the Defense Production Administration, said March 3 in releasing Issue No. 5 of the "List of Basic Materials and Alternates."

Published bi-monthly, the list is a guide to industry, Government, and the military in purchasing materials and in the use of alternates and substitutes for materials in short supply. It categorizes those materials which are critical and those which are relatively easy to obtain for civilian use or manufacture.

About 400 items are classified into three groups. Group I lists those materials which are "insufficient to meet the military and civilian demand" and include an asterisked group of "most critical" materials. Among items listed of general interest to the fishery and allied industries are chlorine, freon, and sulfuric acid, but none of these items mentioned are considered "most critical." However, there are a number of metals included in this group, some termed "most critical," which might be used in construction work in the fishery industries.

Group II is composed of those materials which are "in approximate balance for military and civilian demand." Items of interest to the fishery industries in this group include acetic acid, cellophane, and other chemicals, some lumber and wood products used in construction and boatbuilding, paper and paperboard, as well as some metals.

Group III includes those materials in "fairly good supply." These should be used wherever possible as alternates for materials in the other two groups, and include plastic-type nylon, polystyrene, and lumber and wood products and metals used in construction or shipbuilding. Plastic-type nylon has eased from Group II to Group III.

For details see: List of Basic Materials and Alternates (Issue No. 5) and Press Release DPA 254, dated Mar. 3. Copies of List are available at district and regional offices of the Department of Commerce, or from Printing Services, Department of Commerce, Washington 25, D. C.

Economic Stabilization Agency

OFFICE OF PRICE STABILIZATION

"SALTED CODFISH" REDEFINED: The term "salted codfish" is redefined in Amendment 3 to Ceiling Price Regulation 51. This amendment issued by the Office of Price Stabilization on March 3 defines "salted codfish" as "fish cured in salt in a semi-dry, dry, or hard-dried state commonly known as "bacalao" such as pescada, pollock, saithe, hake, haddock, cusk and ling. This term does not include boneless fillets of codfish." CPR 51 is a ceiling price order for food products sold in Puerto Rico. The amendment became effective March 8, 1952.

The term "salted codfish" is redefined in order to clarify its coverage. It is intended to make clear that all fish cured in salt in a semi-dry, dry, or hard-dried state commonly known as "bacalao" is covered by CPR 51 in Puerto Rico regardless of the source of supply. Boneless fillets of codfish are not covered by the regulation and continue under Ceiling Price Regulation 9.

For details see: Amdt. 3 (Definition of Salted Codfish) dated Mar. 3, 1952, to CPR 51 (Food Products Sold in Puerto Rico).

* * * * *

TEMPORARY SUSPENSION OF SHIPBUILDING INDUSTRY FROM PRICE CONTROL: Temporary suspension from price control of much of the shipbuilding industry was continued until May 13, 1952, by the Office of Price Stabilization, according to a February 25 announcement. The suspension applies only to sales of vessels over 65 feet in length and to their repair and conversion.

A previous suspension action, which expired on February 13, 1952, had been taken in order to allow OPS time to develop a tailored regulation to meet the many and complex pricing problems of the shipbuilding industry. Because many of these pricing problems are still unresolved, it is necessary for OPS to provide a 90-day continuation of the suspension. The action is taken under General Overriding Regulation 9, Amendment 15, effective as of February 13, 1952.

NOTE: FULL TEXTS OF PRICE ORDERS MAY BE OBTAINED FROM THE OFFICE OF PRICE STABILIZATION, WASHINGTON 25, D. C., OR FROM THE REGIONAL OPS OFFICE IN YOUR AREA.

Eighty-Second Congress (Second Session)

FEBRUARY 1952

Listed below are public bills and resolutions introduced and referred to committees, or passed by the Eighty-Second Congress (Second Session) and signed by the President. However, the more pertinent reports, hearings, or chamber actions on some of the bills shown in this section from month to month are also listed.

BILLS AND RESOLUTIONS INTRODUCED:

Commercial Fishing Vessels--Safety Regulations: S. 2617 (Lodge) - A bill to provide for the safety of life and property by establishing certain rules and regulations for certain vessels engaged in commercial fishing; to the Committee on Interstate and Foreign Commerce.

Defense Production Act of 1950 Amendment: S. 2722 (Knowland) - A Senate bill to amend the Defense Production Act of 1950; to the Committee on Banking and Currency.

Defense Production Act Extension: S. 2594 (Maybank) - A bill to extend the provisions of the Defense Production Act of 1950, as amended, and the Housing and Rent Act of 1947, as amended; to the Committee on Banking and Currency.

S. 2645 (Maybank) - A bill to amend and extend the Defense Production Act of 1950, as amended, and the Housing and Rent Act of 1947, as amended; to the Committee on Banking and Currency.

H. R. 6546 (Spence) - Same as S. 2645; to the Committee on Banking and Currency.

Fishery Products Distribution: H. R. 6862 (Kennedy) - A bill to further encourage the distribution of fishery products, and for other purposes; to the Committee on Merchant Marine and Fisheries.

Transfer of Trawler "Delaware:" H. R. 6861 (Kennedy) - A bill to transfer the trawler Delaware from the United States Army Quartermaster Corps to the Fish and Wildlife Service; to the Committee on Armed Services.

Territorial Waters Boundaries: H. J. Res. 373 (Yorty) - Joint resolution declaring the boundaries of the inland or internal waters of the United States to be as far seaward as is permissible under international law, and providing for a survey of such boundaries to be made by the U. S. Coast and Geodetic Survey in the light of the Anglo-Norwegian Fisheries case; to the Committee on the Judiciary.

Water Pollution Control Act Extension: H. R 6856 (Buckley) - A bill to extend the duration of the Water Pollution Control Act; to the Committee on Public Works.

CHAMBER ACTION:

President's Message on Extension of Defense Production Act: Senate and House received message from President recommending strengthening of and extension for 2 years of Defense Production Act; referred to Committee on Banking and Currency in each house.

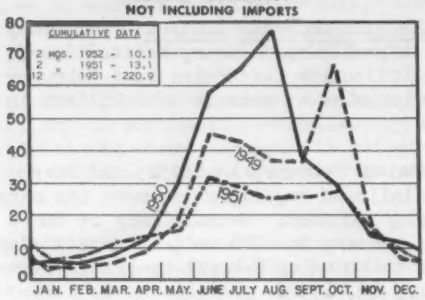
COMMITTEE MEETINGS:

Fats and Oils Import Controls: The Senate Committee on Banking and Currency in executive session on February 26 by vote of 7 to 5 ordered favorably reported back to the Senate without amendment S. 2104, to repeal section 104 of Defense Production Act of 1950, relative to import controls on fats and oils (including fish oils) and related products. (This bill was recommitted to the committee on January 30.)

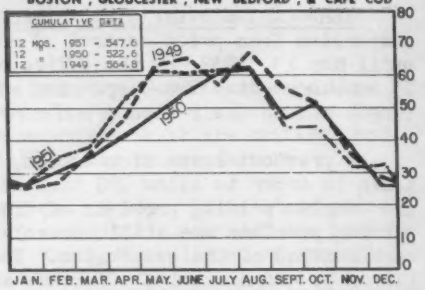
LANDINGS AND RECEIPTS

In Millions of Pounds

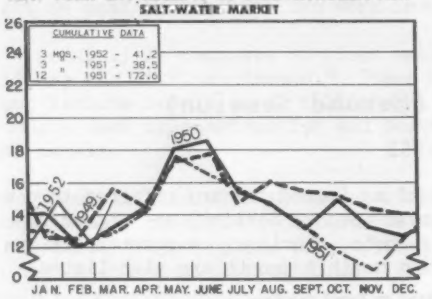
MAINE - LANDINGS
NOT INCLUDING IMPORTS



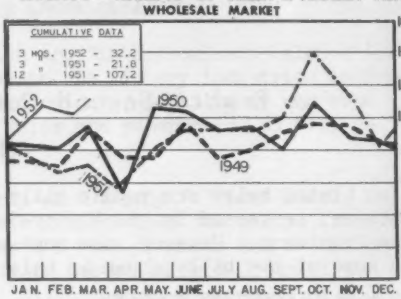
MASSACHUSETTS - LANDINGS
BOSTON, GLOUCESTER, NEW BEDFORD, & CAPE COD



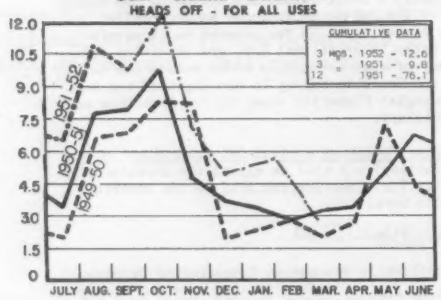
NEW YORK CITY-RECEIPTS OF FRESH & FROZEN FISH
SALT-WATER MARKET



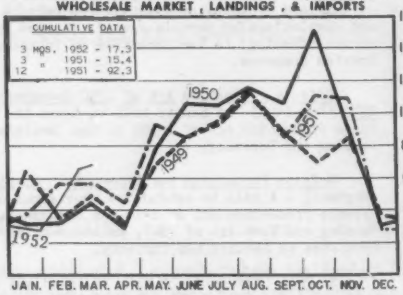
CHICAGO - RECEIPTS OF FRESH & FROZEN FISH
WHOLESALE MARKET



GULF - SHRIMP LANDINGS
HEADS OFF - FOR ALL USES

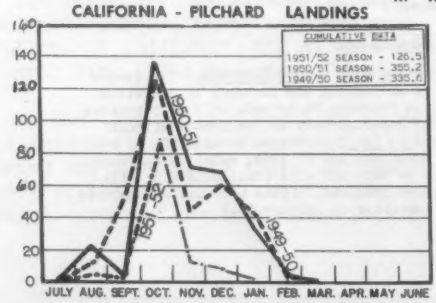


SEATTLE - RECEIPTS OF FRESH & FROZEN FISH
WHOLESALE MARKET, LANDINGS, & IMPORTS

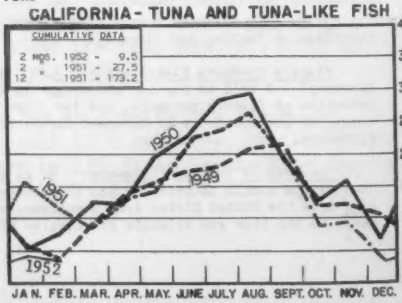


In Thousands of Tons

CALIFORNIA - PILCHARD LANDINGS



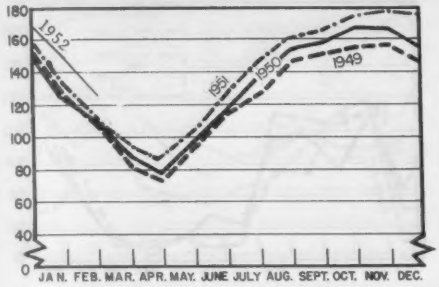
CALIFORNIA - TUNA AND TUNA-LIKE FISH



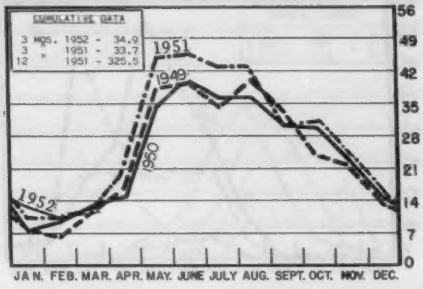
COLD STORAGE HOLDINGS and FREEZINGS of FISHERY PRODUCTS

In Millions of Pounds

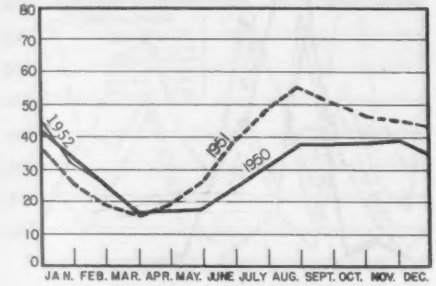
U.S. & ALASKA - HOLDINGS OF FROZEN FISH



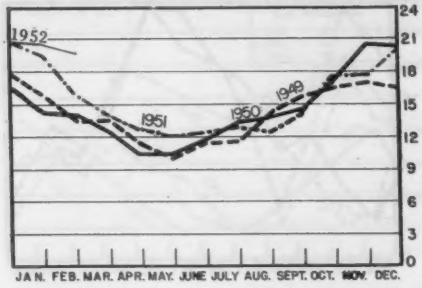
U.S. & ALASKA - FREEZINGS



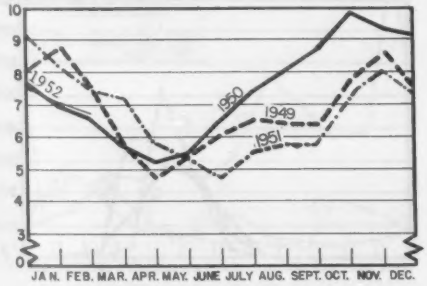
NEW ENGLAND - HOLDINGS OF FROZEN FISH



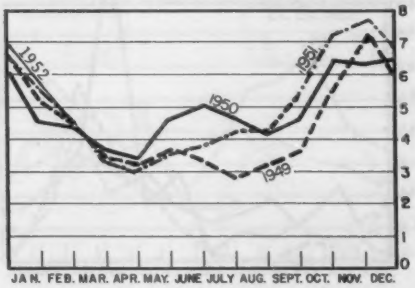
NEW YORK CITY - HOLDINGS OF FROZEN FISH



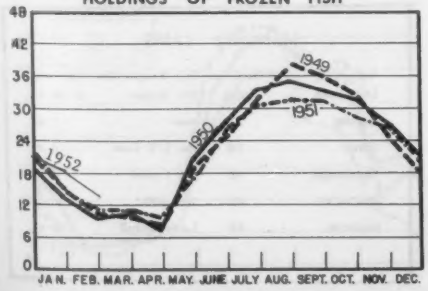
CHICAGO - HOLDINGS OF FROZEN FISH



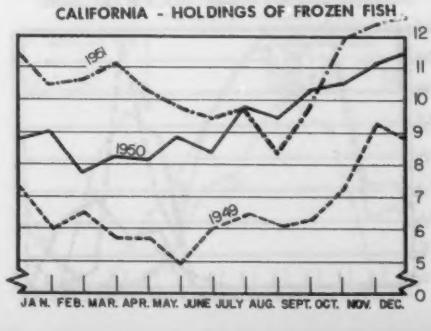
GULF - HOLDINGS OF FROZEN FISH



WASHINGTON, OREGON, AND ALASKA - HOLDINGS OF FROZEN FISH



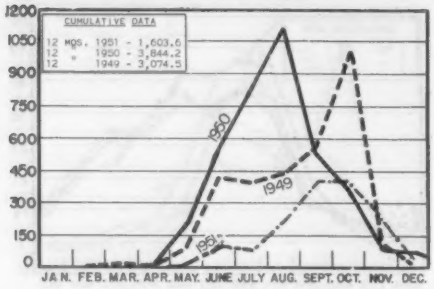
CALIFORNIA - HOLDINGS OF FROZEN FISH



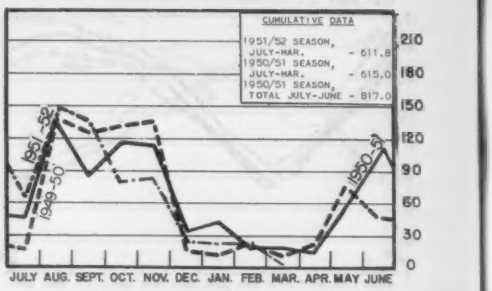
CANNED FISHERY PRODUCTS

In Thousands of Standard Cases

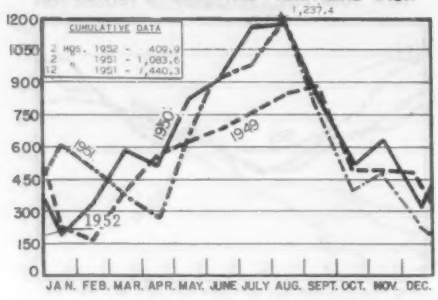
MAINE - SARDINES, ESTIMATED PACK



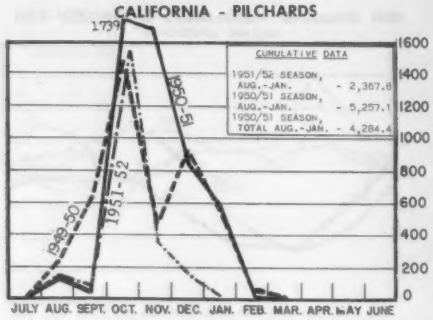
UNITED STATES - SHRIMP



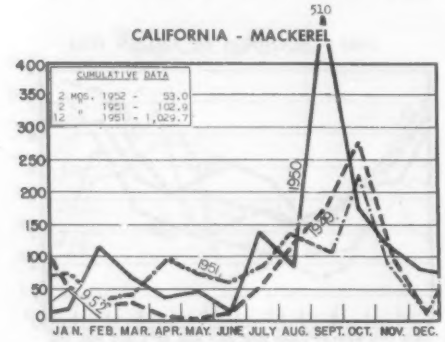
CALIFORNIA - TUNA AND TUNA-LIKE FISH



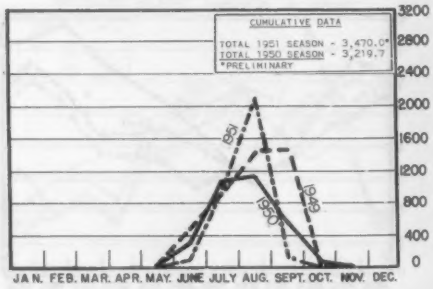
CALIFORNIA - PILCHARDS



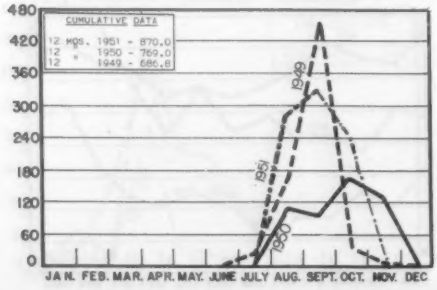
CALIFORNIA - MACKEREL



ALASKA - SALMON



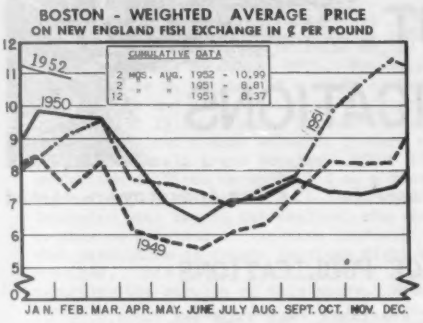
WASHINGTON - PUGET SOUND SALMON

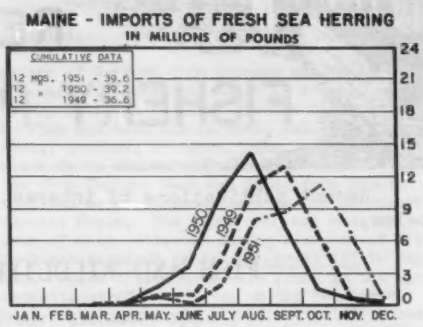


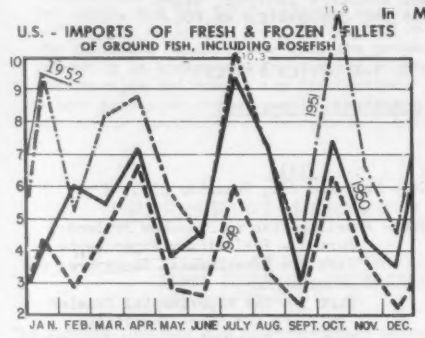
STANDARD CASES

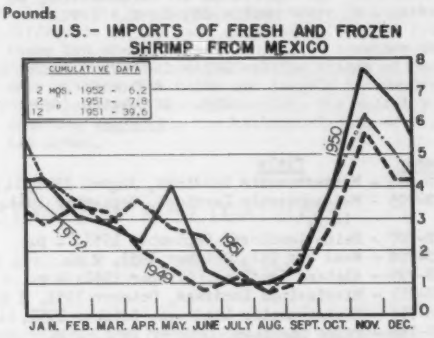
Variety	No. Cans	Can Designation	Net. Wgt.
SARDINES	100	1/4 drawn	3 1/4 oz.
SHRIMP	48	—	7 oz.
TUNA	48	No. 1/2 tuna	7 oz.
PILCHARDS	48	No. 1 oval	15 oz.
MACKEREL	48	No. 300	15 oz.
SALMON	48	1-pound tall	16 oz.

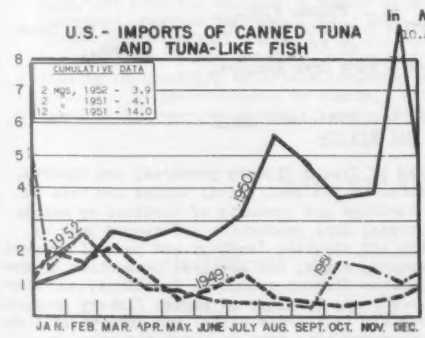
PRICES . IMPORTS and BY-PRODUCTS

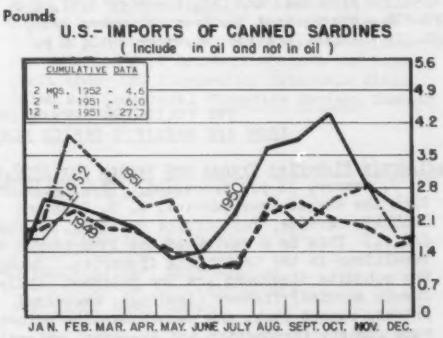


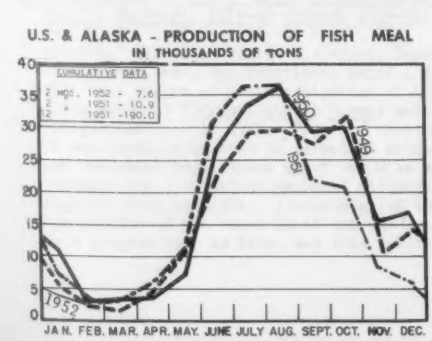


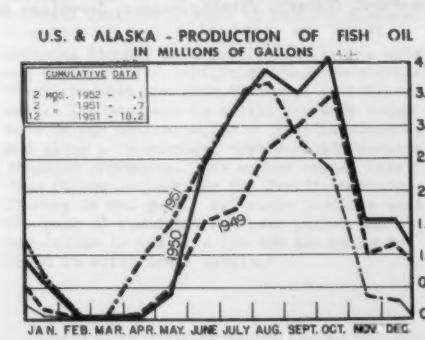












Recent publications of interest to the commercial fishing industry are listed below.

FISH AND WILDLIFE SERVICE PUBLICATIONS

THESE PROCESSED PUBLICATIONS ARE AVAILABLE FREE FROM THE DIVISION OF INFORMATION, U. S. FISH AND WILDLIFE SERVICE, WASHINGTON 25, D. C. TYPES OF PUBLICATIONS ARE DESIGNATED AS FOLLOWS:

CFS - CURRENT FISHERY STATISTICS OF THE UNITED STATES AND ALASKA.
SEP.- SEPARATES (REPRINTS) FROM COMMERCIAL FISHERIES REVIEW.

Number	Title
CFS-695	Massachusetts Landings, August 1951, 14 p.
CFS-705	Massachusetts Landings, September 1951, 14 p.
CFS-707	Maine Landings, September 1951, 4 p.
CFS-708	Meal and Oil, October 1951, 2 p.
CFS-709	Alabama Landings, October 1951, 4 p.
CFS-711	Mississippi Landings, October 1951, 2 p.
CFS-714	Massachusetts Landings, October 1951, 14 p.
CFS-716	Maine Landings, October 1951, 4 p.
CFS-717	Fish Meal and Oil, November 1951, 2 p.
CFS-720	Mississippi Landings, November 1951, 2 p.
CFS-725	Maine Landings, November 1951, 4 p.
CFS-726	Meal and Oil, December 1951, 2 p.
Sep. 306	Freezing Fish at Sea--New England: Part 1 - Preliminary Experiments. Part 2 - Experimental Procedures and Equipment. Part 3 - The Experimental Trawler Delaware and Shore Facilities. Part 4 - Commercial Processing of Brine-Frozen Fish.
Sep. 307	Technical Note No. 17--Refractive Index of Free Oil in Canned Salmon.
Sep. 308	King Crab Recipes.

THE FOLLOWING SERVICE PUBLICATIONS ARE AVAILABLE ONLY FROM THE SPECIFIC OFFICE MENTIONED IN THE REVIEW.

California Fisheries Trends and Review for 1950, by V. J. Samson, 31 p., processed. (Available free from the Market News Service, U. S. Fish and Wildlife Service, Post Office Building, San Pedro, Calif.) This is a review of the 1950 trends and conditions in the California fisheries. Among the subjects discussed are the pilchard (California sardine) fishery (landings, ex-vessel prices, canned pack, and canned sardine prices); tuna fishery (production and ex-vessel prices); mackerel fishery; fishing seasons; freezings and stocks of frozen fishery products; and imports. Included in the statistical tables are data on the landings and products of sardines by months and areas; tuna production and canned pack by months and species; landings and pack of mackerel by months, areas, and species; production of miscellaneous fishery products; freezings; cold storage holdings; landings of market fishery products at certain California ports; and imports of fishery products into Arizona and California.

THE FOLLOWING SERVICE PUBLICATIONS ARE FOR SALE AND ARE AVAILABLE ONLY FROM THE SUPERINTENDENT OF DOCUMENTS, WASHINGTON 25, D. C.

Studies of Georges Bank Haddock. Part I: Landings by Pounds, Numbers, and Sizes of Fish, by Howard A. Schuck, Fishery Bulletin 66, 29 p., illus., printed, 20 cents, 1951. Presented in this paper is an outline of a study of Georges Bank haddock and also details of landings for the years of 1931 to 1948. The haddock has been New England's most valuable fishery resource for nearly three decades. After 1929, production declined markedly and as a consequence a study of the resources was begun to determine what caused the decline, what could be done to maintain or increase production, and what prediction of future landings might be possible. This is the first paper of a series reporting the results of this study. Pounds, numbers, and average weights of fish, and size compositions of landings are given for scrod, for large, and for total haddock, as well as information on trends and seasonal cycles in the landings. While these data are presented primarily as background for further studies, the averages and ranges are informative. The values presented are as nearly complete a record of the quantities of Georges Bank haddock that were landed and sold as can be readily assembled.

Comparison of Haddock from Georges and Browns Banks, by Howard A. Schuck and Edgar L. Arnold, Jr., Fishery Bulletin 67 (from Fishery Bulletin of the Fish and Wildlife Service, vol. 52), 11 p., illus., printed, 15 cents. The purpose of this report is to show a comparison between the haddock from Georges Bank and those from Browns Bank, two major fishing areas in the Northwest Atlantic Ocean. The comparison was made by means of data collected during a cruise of the Service's research vessel Albatross III in June 1949. Large differences were found in the age compositions of fish taken on the two banks. There were also highly significant differences in the average size of the same ages of haddock taken on the two banks. Thus there is a marked difference in the rate of growth of haddock from these two areas. These findings strengthen the concept that the bottom-dwelling stages of haddock of these two banks are largely independent of one another, and substantiate the validity of studying separately the biological data of the two areas.

DEFENSE FISHERIES ADMINISTRATION PUBLICATIONS

THE FOLLOWING PUBLICATIONS ARE AVAILABLE FREE FROM THE DEFENSE FISHERIES ADMINISTRATION, U. S. DEPARTMENT OF THE INTERIOR, WASHINGTON 25, D. C.

The Fishing Industry and the Controlled Materials Plan, DFA Material Bulletin - Number 1, 4 p., processed, revised February 1952. This is a revision of the leaflet issued as an aid to fishing vessel and plant operators experiencing difficulty in obtaining materials necessary for the operation of their vessels or plants. (Also see Commercial Fisheries Review, January 1952, p. 55.)

Instructions for Purchasing New and Replacement Engines for Fishing Vessels, DFA Material Bulletin - Number 2, 2 p., processed, revised January 1952. This is a revision of the outline of procedures for purchasing replacement engines for fishing craft under CMP (Controlled Materials Plan). (Also see Commercial Fisheries Review, January 1952, p. 55.)

MISCELLANEOUS PUBLICATIONS

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE AGENCIES ISSUING THEM. CORRESPONDENCE REGARDING PUBLICATIONS THAT FOLLOW SHOULD BE ADDRESSED TO THE RESPECTIVE AGENCIES OR PUBLISHERS MENTIONED. DATA ON PRICES, IF READILY AVAILABLE, ARE SHOWN.

Age Composition of the Southern California Catch of Pacific Mackerel, 1939-40 through 1950-51, by John E. Fitch, Fish Bulletin No. 83, 77 p., illus., printed. Bureau of Marine Fisheries, Department of Fish and Game, San Francisco, Calif., 1951. This is a report of an investigation of the Pacific mackerel (Pneumatophorus diego) which was inaugurated in July 1929. From the data obtained it was hoped to be able to formulate policies and recommend regulations which would be most suitable for a sustained mackerel fishery at the highest level possible. A knowledge of the age composition of the catch is of extreme importance in a program such as this, and this publication presents data on the age composition of the southern California catch of Pacific mackerel from 1939-40 through 1950-51. The Pacific mackerel fishery in general, the fishing methods employed, and localities where the mackerel fleet operates are also discussed in this report. It describes in detail the work being done on age determination of Pacific mackerel, and gives a historical review of the mackerel sampling procedure. The author states that "the future outlook for the Pacific mackerel fishery is not good. All signs indicate that the peak of abundance has been passed and the population is now at a low ebb and being reduced to still lower levels."

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE AGENCIES ISSUING THEM.

(Alaska) 1950 Annual Report, Report No. 2, 70 p., illus., printed. Alaska Fisheries Board and Alaska Department of Fisheries, Juneau, Alaska, 1951. A summary is given in this report of the activities of the Board and the Alaska Department of Fisheries for 1950, together with a financial statement, a chronological history of the salmon canneries in Western Alaska from 1884 to 1950, a discussion of inspection and stream improvement, and a progress report on the troll salmon investigation. This report also contains statistics on the number of salmon canneries and pack (1941-1950); comparative values of canned salmon by species (1941-1950); production (quantity and value) of 25 Alaskan fishery products (1939-1948); the number of salmon taken from 1905 to 1949 by gear and species in each geographic section of Alaska; and a discussion of the plans of the Department and its future outlook.

Tenth Annual Report of the Atlantic States Marine Fisheries Commission (to the Congress of the United States and to the Governors and Legislators of the Fifteen Compacting States), 48 p., printed. Atlantic States Marine Fisheries Commission, Mt. Vernon, N. Y., December 1951. In this annual report, the Commission reports progress on fishery research projects initiated and carried on by the Commission and carried on for it by the U. S. Fish and Wildlife Service. These include studies on clams, shad, exploratory fishing for tuna off the New England and Carolina coasts, and freezing whole fish at sea. Under the North Atlantic Section of the report are included discussions of projects dealing with lobsters, haddock, clams, fishery laws, Atlantic salmon, herring, sea scallops, smelt, freezing fish in the round at sea, striped bass, dams on the Connecticut River as they affect shad, survey of former shad streams in Maine, and exploratory fishing for tuna. Under the Middle Atlantic Section, there is a discussion of projects dealing with striped bass, fluke, Hudson River shad, fishery research programs in Delaware and New Jersey, Delaware River shad, conferences between New Jersey and Delaware Commissioners, hard clams in New Jersey, offshore waste disposal, and Susquehanna shad. The Chesapeake Bay Section includes discussions of projects concerned with striped bass, crab, croaker, Chesapeake Bay shad, Chesapeake Bay Institute, Chesapeake Bay Authority, Amendment No. 1 to the Atlantic States Marine Fisheries Compact, and Pamlico Sound shrimp. Under the South Atlantic Section, a discussion of the following programs is included: shrimp, cooperative research, exploratory fishing for tuna, and Pamlico Sound shrimp. Another section of the report deals with the International Commission for the Northwest Atlantic Fisheries, the marine fisheries pollution study, catch statistics, reciprocal warden act, fisheries education, Gulf and Pacific Coast developments, amendment to the Atlantic States Marine Fisheries Compact, fisheries research, and state legislation needed.

Australian Fisheries, Current Affairs Bulletin, vol. 9, no. 3, 15 p., illus., printed, 6d. (about 10 US cents). Commonwealth Office of Education, Sydney, Australia, Nov. 5, 1951. This report covers the present position and potentialities of the Australian fisheries. The general conclusions reached in regard to the future possibilities of Australia's fisheries are: (1) the estuarine fisheries and demersal fisheries cannot be expanded, as the estuaries and the narrow continental shelf are already overfished; (2) the fresh-water fisheries can be expanded if fish conservation measures are rigidly enforced, soil conservation measures are adopted to reduce siltage, and fish culture in fertilized ponds is introduced; and (3) the pelagic fisheries can be greatly expanded, with varieties particularly suitable for canning, such as the tuna, pilchard, anchovy, and mackerel present in large numbers in the surrounding seas.

Australian Journal of Marine and Freshwater Research, October 1951, vol. 2, no. 2, 141 p., plus plates, illus., printed, 7s. 6d. per issue (approx. 85 cents). Commonwealth Scientific and Industrial Research Organization, 314 Albert Street, East Melbourne, C2, Victoria, Australia. This particular issue contains the following articles of general interest: Races and Populations of the Australian Pilchard, Sardinops neopilchardus (Steindachner), by M. Blackburn; Growth and Habits of the Sea Mullet, Mugil dobula Gunther, in Western Australia, by J. M. Thomson; and a Survey of the Inland Fisheries of the Territory of New Guinea and Papua, by W. H. Schuster.

Bears Bluff Laboratories, 1948 to 1952, by G. Robert Lunz, Contributions from Bears Bluff Laboratories No. 13, 17 p., illus., printed. Bears Bluff Laboratories, Wadmalaw Island, South Carolina, January 1952. This report brings up to date the operation of the laboratories and facilities for research. It describes the work being done for the development of the marine resources of the State of South Carolina, particularly in the field of oyster culture. Other studies on the blue crab, effects of crab trawling in inshore waters on the shrimp and small fish, and observations on the development of a salt industry are also described.

The Chum and Pink Salmon Fisheries of British Columbia, 1917-1947, by William S. Hoar, Bulletin No. 90, 53 p., illus., printed. Fisheries Research Board of Canada, Ottawa, Canada, 1951. Catch statistics for a 31-year period, from 1917 to 1947, have been summarized graphically in this report to show variations in the catches from the major fishing areas and to show the manner in which the catches have been utilized. The availability of these salmon has shown marked changes. Although the total pack of British Columbia pink salmon has not varied greatly, the catches in the northern areas of

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the province have declined steadily. In contrast, chum salmon show no such definite trend but the catch has fluctuated considerably with three regularly occurring periods of low production. Approximately 95 percent of the pink salmon catch is canned, while only about 60 percent of the chums are used in this way. At present the remainder of the chum salmon are used fresh and frozen, though smaller amounts have from time to time been processed in other ways. This report describes factors affecting the fishery, and includes data on the disposition of the catch, variation in size of fish, and a discussion of catch statistics.

A Comparison of the Populations of Yellowfin Tuna, "Neothunnus macropterus", from the Eastern and Central Pacific, by H. C. Godsil and E. C. Greenhood, Fish Bulletin No. 82, 37 p., illus., printed. Bureau of Marine Fisheries, Department of Fish and Game, San Francisco, Calif., 1951. The study reported upon in this publication was designed to test the preliminary conclusion that the stock of yellowfin tuna in the central Pacific differs from that of the eastern Pacific. This report discusses the methods of analysis, effects of freezing, comparison of central Pacific stock with that of eastern Pacific, and homogeneity of the central Pacific stock. Results of this study confirm the earlier findings and enhance considerably the probability that the central Pacific stock is distinct from and nonintermingling with that of the eastern Pacific.

The Crab Fishery off Graham Island, British Columbia, to 1948, by Robert G. McMynn, Bulletin No. 91, 29 p., printed. Fisheries Research Board of Canada, Ottawa, Canada, 1951. A study of the past and present status of the crab fishery off Graham Island and the causes of fluctuations are presented in this report. Included in this publication are descriptions of the fishing grounds, types of gear used in the fishery, canning operations, methods of investigation, tagging experiments, and general observations. Canned crab production statistics are given for the years 1927-47. The number of crabs caught each year in certain areas and the average daily catch per fisherman for the years 1933 to 1948 are also included.

"Dehydrated Fish Fillets Could Become Popular in South Africa," article, The South African Shipping News and Fishing Industry Review, November 1951, vol. 6, no. 11, p. 63, illus., printed, 2s. (about 30 US cents). South African Trade Newspapers (Pty.) Ltd., Cape town, South Africa. This article describes a new dried fish product known as "pressfish," which was developed after several years of research in collaboration with Norwegian fishing interests and Danish scientific institutions. The method of preservation consists of dehydration and pressing. The keeping quality of the new product is claimed to be far superior to ordinary dried fish or "klipfish" and the flavor and nutritive value are retained in the "pressfish." It is sold in block form, made to standard dimensions. This greatly reduces handling, cost of marketing, storage, and transportation. The product is aimed at the native South African population.

Fish; Fresh (Chilled) and Frozen, Federal Specification PP-F-381c, dated February 1, 1952, 9 p., printed, 10 cents. General Services Administration, Washington, D. C. (For sale by Superintendent of Documents, Washington 25, D. C.) The new specifications are for use by all Federal agencies for procuring fresh and frozen fish. Suppliers selling fresh and frozen fish to Federal agencies are required to meet the specifications as given. Explained are the requirements; sampling, inspection, and test procedures; and preparation for delivery. Supersedes Federal Specification PF-F-381b dated June 24, 1941.

Government-Owned Inventions for Free Use, 104 p., printed, $1.00. Government Patents Board, U. S. Department of Commerce, Washington, D. C., 1952. (For sale by Superintendent of Documents, Washington 25, D. C.) This publication lists 2,339 United States-owned patents available without charge under nonexclusive, royalty-free license from the Government. These inventions cover a wide variety of products (including fishery products) and processes, raw material uses, additional ways of producing already known results, and advances in methods and processes. Many of them require only a minimum of further technical development. This new guide is a fertile source of technical information for (1) manufacturers who are faced with production problems, and (2) scientists and technologists working on new research problems. The information contained in this publication is divided into two sections. The first lists the patents chronologically by United States Patent Office numbers, with the title of each invention, name of the inventor or inventors, name of the agency administering the patent, including the issuance of licenses, and one or more standard industrial classifications showing the major groups and sub-groups where the invention is applicable. The second section contains a cross-reference of the patents under 21 major classifications, by United States Patent Office number. Since many patents are applicable under more than one industrial classification, a single patent may be found under several groups. The information contained in this publication has been taken from the records of the Index of Inventions, Government Patents Board. It has been published as a service to American business, particularly to small manufacturers.

Guide for the Prospective Exporter, 56 p., printed. Economic Cooperation Administration, Office of Small Business, Washington 25, D. C., 1951. This is a handbook on the principles of exporting, designed especially for the small businessman interested in trading under foreign assistance funds.

Gulf States Marine Fisheries Commission Second Annual Report 1950-51 (to the Congress of the United States and to the Governors and Legislators of Alabama, Florida, Louisiana, Mississippi, Texas), 34 p., printed. Gulf States Marine Fish-

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eries Commission, 312 Audubon Building, New Orleans 16, La. Resumes of fisheries research activities of the various Gulf states are given in this report. Also included are short discussions of the reciprocal fishery agreements; shrimp and shrimp importation studies; and inshore oceanographic survey of the Gulf; and marine fisheries student education. The report, in addition, summarizes the U. S. Fish and Wildlife Service activities in fishery research and explorations in the Gulf area, and contains a financial report of the Commission.

(International Court of Justice) Fisheries Case (United Kingdom v. Norway), Judgment of December 18th, 1951 (Reports of Judgments, Advisory Opinions and Orders), Sales No. 74, 206 p., printed, in English and French. A. W. Sijthoff's Publishing Co., Leyden, Netherlands. This booklet contains the judgment and opinions in the fisheries case between the United Kingdom of Great Britain and Northern Ireland, and the Kingdom of Norway filed by the former on September 28, 1949, before the International Court of Justice. The subject of the proceedings was "the validity or otherwise, under international law, of the lines of delimitation of the Norwegian fisheries zone laid down by the Royal Decree of July 12th, 1935, as amended by a Decree of December 10th, 1937, for that part of Norway which is situated northward of 66°28.8' (or 66°28'48") N. latitude." Among other things, the application asked the Court "to declare the principles of international law to be applied in defining the base-lines, by reference to which the Norwegian Government is entitled to delimit a fisheries zone, extending to seaward 4 sea miles from those lines and exclusively reserved for its own nations, and to define the said base-lines insofar as it appears necessary in the light of the arguments of the Parties, in order to avoid further legal differences between them." The Court found by ten votes to two "that the method employed for the delimitation of the fisheries zone by the Royal Norwegian Decree of July 12th, 1935, is not contrary to international law; and by eight votes to four, that the base-lines fixed by the said Decree in application of this method are not contrary to international law." This publication, in addition to the judgment of the Court, contains the individual opinion of Judge Alvarez, the separate opinion of Judge Hsu Mo, and the dissenting opinions of Sir Arnold McNair and Judge J. E. Read.

Japan's Fresh-Water Fisheries, by Donald L. McKernan, Preliminary Study No. 68, 44 p., illus., processed. Natural Resources Section, Supreme Commander for the Allied Powers, Tokyo, Japan, December 1951. (Reports may be purchased only in photostat or microfilm from the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C.) This report deals with a survey made during March-June 1950 for the purpose of determining methods of increasing Japan's inland fisheries production. The author states that two methods of increasing the annual production of the inland fisheries of Japan appear practical: (1) by increasing the carp culture on inland waters; and (2) by inaugurating fisheries management programs to protect and rehabilitate the dwindling natural population and thus increase the productivity of the natural fisheries resources. Among the subjects covered are: carp fishery; trout culture; ayu (trout-like fish) fishery; eel culture; natural production from inland fisheries; production of bullfrogs; Lake Suway development; shellfish and seaweed culture; and fisheries administration. (A summary of this survey appears in Commercial Fisheries Review, August 1950, pp. 48-49.)

(Oregon) Fish Commission Research Briefs, August 1951, vol. 3, no. 2, 55 p., illus., printed. Fish Commission of Oregon, Portland 4, Oregon. Included in this edition of the "Briefs" intended to inform the public, industry, and other interested parties of the current studies of the Commission are the following: "A Study of the Bait Seine Fisheries of Oregon;" "Migration of White Sturgeon (Acipenser transmontanus) in the Columbia River;" "Spring Chinook Salmon Diet Experiments at the Bonneville Hatchery;" "Food of the Chinook and Silver Salmon Taken off the Oregon Coast;" "Stream Improvement as Conducted in Oregon on the Clatskanie River and Tributaries;" and "Spring Creek Crayfish Migrations, 1949 and 1950."

Purse Seines and Other Roundhaul Nets in California, by W. L. Scofield, Fish Bulletin No. 81, 87 p., illus., printed. Bureau of Marine Fisheries, Department of Fish and Game, San Francisco, Calif., 1951. This report summarizes the history and development of the purse seine and other roundhaul nets in California. Among the subjects covered are: kinds and operation of roundhaul nets, net construction, early history of roundhauls in California, brief descriptions of early nets and modern roundhaul nets, recent developments in the operation and construction of roundhaul nets, and descriptions of sardine and tuna purse seines.

Raising Small Animals for Pleasure and Profit, by Frank G. Ashbrook, 260 p., illus., printed, $4.00. D. Van Nostrand Company, Inc., 250 Fourth Avenue, New York, N. Y. This book contains chapters on fish production (pond fish, trout, and frogs) and fish-bait culture. Also included is a chapter on unusual fish and meats. Most of the book is devoted to poultry, game birds, fur animals, and other small animals.

(Scotland) Second Annual Report of the Supervisory Committee for Brown Trout Research 1949-1950, 12 p., illus., printed. Freshwater and Salmon Fisheries Research, Scottish Home Department. His Majesty's Stationery Office, Edinburgh, Scotland, 1951, 2s. 6d. (about 35 U. S. cents). Reports on the biology of trout and associated bottom studies, zooplankton and phytoplankton surveys, and fertilization experiments for the period November 1949 to October 1950.

THESE PUBLICATIONS ARE NOT AVAILABLE FROM THE FISH AND WILDLIFE SERVICE, BUT USUALLY MAY BE OBTAINED FROM THE AGENCIES ISSUING THEM.

(Colony of Singapore) Report of the Fisheries Department, 1950, by T. W. Burdon, 70 p., illus., printed, British Malaysian $1.00 (approximately US$0.35). Government Publications Bureau, Singapore, 1951. The year 1950 was of particular importance in the history of the Fisheries Department of Singapore as new staff and facilities were added for the purpose of obtaining detailed information required for developing the fishing industry, according to this report. Also, during 1950 the importation of fish into Singapore, particularly from Sumatra, was greatly reduced, and although total quantities of fresh fish passing through auction markets were slightly higher than in the preceding year, there were indications that the fishing industry was passing through a critical phase. Included in this report are discussions on the availability of fresh fish; inventory of the fishing industry (number of fishermen, licensed fishing boats, and gear); transport; marketing; price of fresh fish; price of producer goods; comparative level of fish prices and other commodities; trade in salted and dried fish; and trade in other marine products.

CONTENTS, CONTINUED

CORRECTION

A WORD WAS LEFT OUT ON PAGE 9 OF THE DECEMBER 1951 ISSUE OF COMMERCIAL FISHERIES REVIEW. IN THE FIRST PARAGRAPH OF THE SECTION HEADED "EFFECT OF IMPORTS," THE SENTENCE BEGINNING ON LINE 9 SHOULD READ (THE WORD OMITTED IS UNDERLINED): "FORTUNATELY, BECAUSE OF THE HIGH LEVEL OF PROSPERITY IN THE UNITED STATES, THE GREAT QUANTITIES OF IMPORTS AND THE LARGE DOMESTIC PRODUCTION HAVE BEEN ABSORBED WITHOUT PLACING UNDUE ECONOMIC HARDSHIPS ON THE NEW ENGLAND LOBSTER FISHERMEN."

Editorial Assistant--Ruth V. Keefe Illustrator--Gustaf T. Sundstrom

Compositors--Jean Zalevsky, Dorothy Stein, Betty Coakley

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Photograph Credits: Page by page, the following list gives the source or photographer for each photograph in this issue. Photographs on pages not mentioned were obtained from the Service's file and the photographers are unknown.

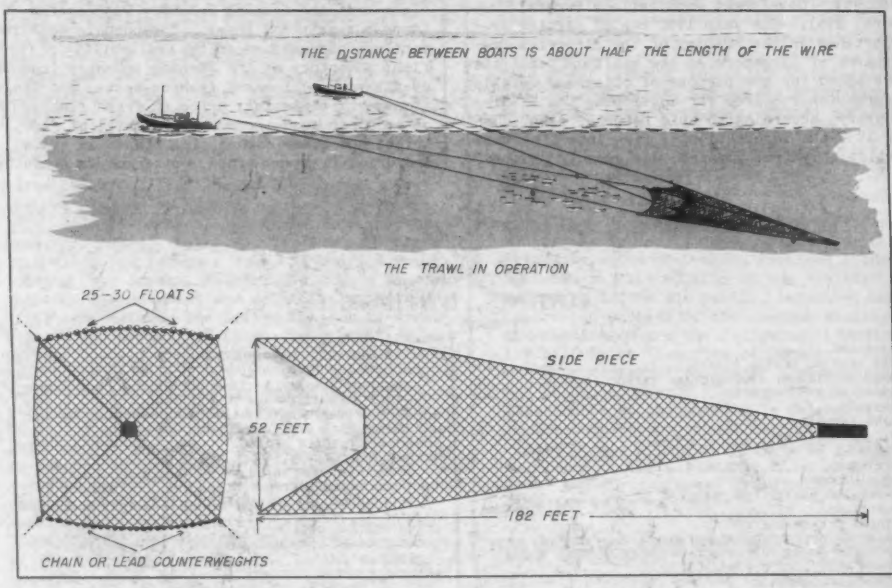
Cover page, pp. 1, 3, 5, 6, 7, 8, 9, 10, 15, 16, 17, 18--Melvin E. Light; p. 35--R. Stevens; p. 48--Fiskeridirektoratets Havforskningsinstitutt, Bergen, Norway.

INTERIOR--DUPLICATING SECTION, WASHINGTON, D.C., JOB# 18461

FLOATING TRAWLS

Fishery Leaflet 343, "Floating Trawls," is a description of the Danish floating trawl.

This 5-page report gives the specifications of the Danish floating trawl together with a brief report on its operation and construction. A number of sketches showing the construction of the trawl are included.



It is believed by foreign observers that with modifications the floating trawl could be employed in many coastal areas where herring have not been previously caught, and may act as an excellent substitute for the drift net. There is also reason to believe that the Danish trawl may be employed in the cod fishery, and with some slight adjustments in the trawl it would be utilized for catching whitefish.

Copies of Fishery Leaflet 343 may be obtained free upon request from the U. S. Fish and Wildlife Service, Washington 25, D. C.